Light and Lighting

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The Cost of Street Lighting

ONE of the most frequent topics of discussion at the recent street lighting conference was that of money. The technical aspects of street lighting were also discussed but it would seem that the "hardware" has now reached a stage where little development can be expected for some years so that those responsible for lighting our roads and making them safer at night could get on with their job—if only they had the money. The suggestion that insurance companies, who pay out vast sums each year as a result of accidents caused by inadequate lighting, might be invited to contribute towards the cost of street lighting is one worth following up. If the increase in road traffic during the next few years is going to be as great as is expected in some quarters then better road lighting we must have; the money for it must be found and if it cannot be provided out of the taxes we already pay then it must be found some other way.

Notes and News

I.E.S. Presidential Address

At the opening meeting of the new session of the Illuminating Engineering Society, held at the Royal Institution on October 13, Mr. W. R. Stevens was inducted as President. For the title of his presidential address Mr. Stevens used the newly adopted motto of the society "Passim Spargere Lucem," meaning "To spread light everywhere." His main theme was that of all the many ways in which the society attempts to fulfil the promise of its motto the most important is that of helping its members to help themselves.

There are three main springs, he said, from which new ideas on lighting may arise: (i) the study of light sources; (ii) the study of seeing; and (iii) the study of lighting installation design.

In the past interest in artificial lighting has usually followed the introduction by physicists and chemists of new light sources and in recent years at least, application engineers have never fully worked out one source before another has appeared. Now we have the tubular fluorescent lamp, the full possibilities of which have not yet been exploited, perhaps not even realised. We may ask what further revolutions in lamp design are likely. The answer is less hopeful than it was 20 years ago; we now think we can see ahead more clearly and the views are less spectacular. New sources will no doubt be evolved though less frequently than in the past, and in the meantime we shall benefit from detailed improvements on existing sources.

In many ways the most fascinating research in lighting is that which aims at understanding the behaviour of the visual mechanism. The work follows two parallel channels; one concerns the pathology of the eye, the other is directed to measuring visual performance. The lighting engineer is more interested in the second since the results may help him to design better lighting installations. We should not hope for too much from such work as it seems unlikely that there are as yet undiscovered any unusually ingenious ways of exploiting the sense of sight for ordinary jobs; for the lighting of shops, factories and offices the chief value of the work of Weston or Harrison and Meaker is to remove the "hit-or-miss" approach to design rather than to discover new methods of lighting.

Great care must be taken in interpreting the results of experiments which attempt to assess the reactions of human beings. The results are only valid for the particular conditions of the experiment from which they were obtained. Almost invariably in research on seeing, these conditions are so restricted that one is tempted to extend the range of validity of the results; for example, Lythgoe's work on visual acuity has unfortunately been treated in this way to support the twin fetishes of uniform illumination and uniform brightness.

Research on seeing is therefore unlikely to shatter our present notions about lighting or lead to radically new methods; it can, however, put our ideas straight, make practice definite instead of vague, and so enable the average lighting engineer to do better work. Its value, therefore, is great.

Lighting practice at the present time is still largely a matter of "cut and try." We have a few useful rules which guide us in designing an installation and a few rules which seem to have no foundation in experiment or common sense. For the

most part we must design by experience; sometimes, however, experience degenerates into routine and this must be avoided. Greater use of imagination is needed in everyday jobs; some of the more unorthodox suggestions which have been made from time to time might be tried out.

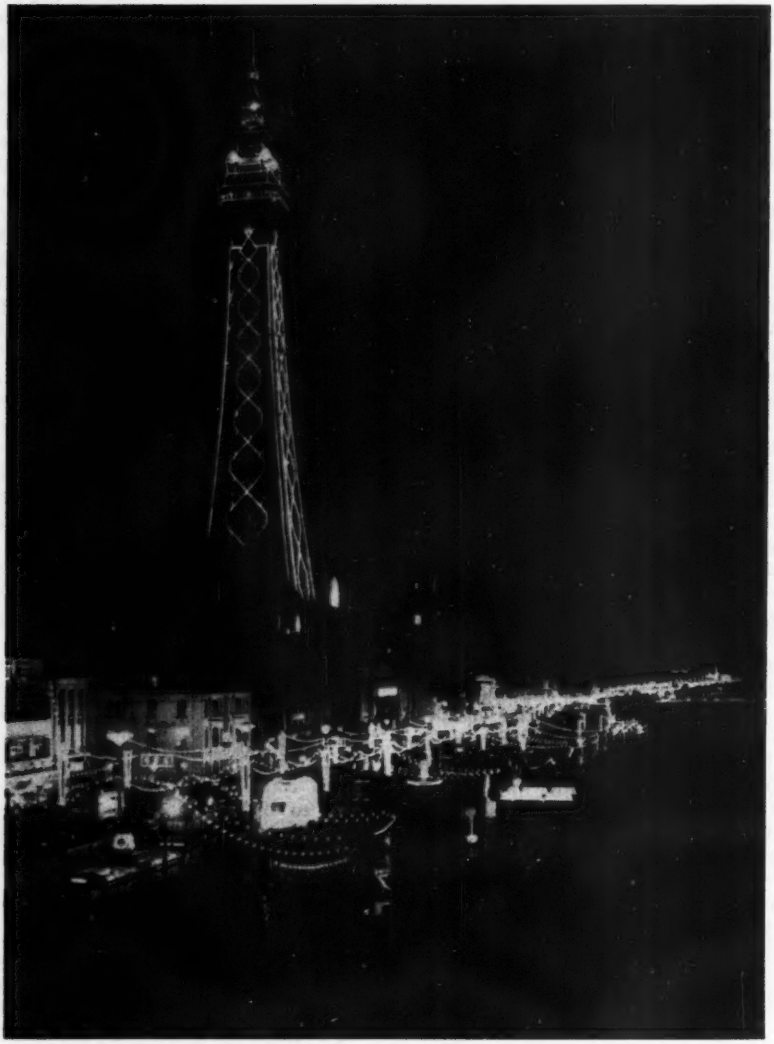
Many people tend to regard fashionable changes with some contempt. Fashion, however, provides variety. Innate in all of us is the need for change and contrast in our daily lives. Inevitably, therefore, over the years we have changes in dress, habits, preferences in the various art forms—changes in public favour which are encouraged by the artists, composers and playwrights themselves who are constantly seeking new methods of expression. In those forms of self-expression, such as architecture and lighting, which are closely allied to engineering there is an additional impetus to change because of the advances in technology; the never ending stream of new devices and techniques accentuates our desire for change. Change in fashion is an essential element of living and should be encouraged; we should be making fashion more often rather than copying in a humdrum effort-saving way what we have always done. The effort is worth making; we have the ideas, but our weakness is in failing to try them on a large scale. The application engineer must continue to find better ways of doing his job. If he is to receive less stimulus than in the past from new light sources then he must seek to provide the stimulus in other ways; he must improve his own standards.

Many people have inefficient, unattractive and often archaic lighting and it is up to the I.E.S. to show them how much better it could be done. This is likely to be difficult because the bare provision of light is so simple that nearly everyone regards himself as a lighting expert and cannot understand how anyone need devote a lifetime to the subject in order to be proficient in it. It is doubtful if literature and lectures alone are sufficient means of educating the user. It is said that one cannot teach a child—one can only expose him to information. The best course with lighting is probably to expose the user to good lighting rather than to good verbiage.

There is also the matter of the education of the lighting engineer; if the general standard of lighting is to be improved lighting engineers must endeavour to do each job a little better than the last one. Some of this improvement will come from a study of the mistakes made, of the " things that could have been better "; but much more will come from discussion and the interchange of ideas. This is the Illuminating Engineering Society's main task and opportunity; by providing a platform from which views can be aired, a journal in which those views can be recorded and meeting places in which notes can be compared the society plays a vital part in improving standards of lighting. Any other tasks performed by the society are secondary to this one of improving the abilities of its members.

It must be remembered that the success and value of the I.E.S. as a society depends upon what members put into it; the more that is put in the more there is to take out. A bigger part should be played by the application engineers both at meetings, particularly Summer Meetings where the opportunity for discussion and intermingling is greatest, and in written contributions. The society also needs to broaden its membership and needs the stimulus of contact with artists, ophthalmologists, architects and all those concerned with lighting and vision so that it does not become self-contained and trying always to feed upon its own ideas.

During the few years of its existence the society has achieved much; it has set standards of good lighting, encouraged the training of recruits to the industry, has contributed to national and international deliberations and has gained a reputation as an impartial authority. Above all it has assisted an increasingly large membership to do increasingly good work.



The front at Blackpool during the illuminations.

Lamp Posts and Landscape

by

JOHN BETJEMAN

I think it is useless to consider the design of street lamps first and the streets in which they are to go afterwards. England is far too varied and delicate in her building materials to have standardised designs plumped down in her towns regardless of local scale, colour and texture. I think it must have been this inhuman, standardising attitude to our beautiful country which resulted some years ago in the Royal Fine Art Commission choosing some of the less hideous designs of concrete standard and passing them, if not approving them. Some manufacturers have been so unscrupulous as to put in their catalogues "approved by the Royal Fine Art Commission" against certain designs. Gullible, if well-intentioned, Borough Engineers have as a consequence put down many monstrosities, much too large, thick, ponderous and coarse for the old towns and villages for which they are responsible and they have permanently ruined their main streets by day-time. It is no use looking at a design for a lamp standard in a catalogue unless one sees it in the mind's eye set up in the street.

Luckily to-day there is excellent liaison between the Ministry of Transport and the Royal Fine Art Commission, so that where trunk roads go through old towns and villages, the Royal Fine Art Commission is consulted and each case is treated on its individual merits. Borough Engineers have always been helpful, and many a town has been saved from a fate even worse than Salisbury or Chippenham or Devizes, to quote three of 87 instances of towns made hideous by ill-designed jazz-modernistic

High Street, Burford, as it is to-day.

concrete standards. But side streets and others which are not trunk roads are still a local responsibility only.

Everyone has a favourite town or village. Let me choose a few favourites of mine and consider their qualities as street architecture. Launceston is, I think, the most beautiful town in Cornwall. It has narrow streets of high houses, Georgian and earlier, most of them built of slate, that feathery grey slate of Cornwall, varied here and there with Georgian red-brick. It has a magnificent church with a carved granite exterior, and the whole town is high on a hill and dominated by castle ruins. Like all old English towns its growth has been gradual and haphazard. Now that it is complete it looks from the distance like a hilltop fortress, and the first thing one notices about it is its skyline and the next the pale weathered silvery-grey of most of its buildings. As the skyline is so much a feature of this town it would obviously be a crime to dominate the place with the thick necks of sick concrete serpents reaching over the castle gardens and the chimney stacks. Since the houses are mostly comparatively high, wherever possible iron brackets should be used, if there *must* be new street lighting, and as the pavements are narrow the thinnest possible columns should be used if there must be 25-foot columns.

Louth, in Lincolnshire, is one of the less known, but most attractive towns we possess. It stands at the foot of the chalk wolds, a cluster of dark, old red-brick houses with lighter red tiled roofs gathered round the magnificent golden grey spire of its parish church. Viewed from the wolds above it, it is like an old sea-port and the sea, instead of being water, is composed of long miles of grassy marsh, intersected by dykes and canals and far away is the low sandy shore of the North Sea itself. To walk in the streets of Louth is to walk among the mellow brick walls of a Dutch picture. How hideously inappropriate a thick concrete standard looks here may be judged from the example, fortunately unique in the town at the time of writing, close to the parish church. If I try to analyse why concrete looks so ugly in Louth I would say that it is for these reasons—the town is full of good woodwork Georgian windows, delicately moulded cornices, well-proportioned street doors. But there can be no delicate moulding on concrete. Next, the texture of the brick is varied, some dark red, some pale

High Street, Burford, as it might look with lamp standards.

pink, some glazed, some orange. Against this concrete, whatever its colour, is unvaried and obtrusive. Finally there is again the all important question of sky-line.

Burford, in Oxfordshire, is mostly one broad street descending a steep hill to the River Windrush. The houses are of all shapes and sizes and their harmony is one of material. The limestone of Burford is a golden honey colour, sometimes varying to silver-grey. Stone is used in these parts and worked as easily as wood in places where there are not local quarries. The windows have stone mullions and transoms, stone arches give glimpses of cobbled yards where hollyhocks rise above stone garden walls, stone tombstones carved in a rich Baroque style surround the golden-grey stone church, the green of the Windrush Valley, the distant elms and beeches intensify the gold of the stone, and almost every building is worn and weathered by time. The mouldings of its stone dressings most exquisitely hold the shadows. How could anyone put into this town the staring, glass-facia of a modern chain store, let alone the towering triangular, concrete serpent of a modern lamp standard? Here, if anywhere, flood lighting would be the best form of street lighting, for the main street is broad and there is room for it.

Finally let me consider a leafy and attractive part of the sad Borough of Paddington, where these words are written. Here we have not the unconcious artistry of our old towns, but conciously planned streets and planned vistas, mostly Victorian, but in a Renaissance tradition of town planning. Stucco houses, a little later and more Italianate than the earlier Georgian crescents and terraces of such Spas as Cheltenham and Leamington, stand well back among limes and plane trees in orderly semi-detachment, either side of broad streets. The lamp-posts everywhere are a delight, and related in scale to the houses. Unfortunately they have been painted aluminium but one is still able to appreciate the Georgian dignity of their proportions. The bases of some of the older lamp-posts in Paddington seem to be old canons, the next oldest have the vestry of Paddington recorded on them in cast iron, and the Borough of Paddington maintains the same design, with its own arms and initials. A tapering column sprouts from two acanthus leaves and flowers into a circular lantern crested at the top. The lantern is neither too large nor too small for

One of the old lamp-posts used in the Borough of Paddington.

the column which supports it, and the whole thing is well designed for the width of the pavement and the road. Mr. Peter Varnon, that pioneer for decent modern street lighting, has pointed out to me how anyone can tell from a photograph, or could tell until standardisation—what town or borough was illustrated by the design of lamp-posts, for different towns and boroughs have different designs, sometimes named after them in the catalogues, of steel and cast-iron lamp-post manufacturers.

Now the point of all this has been to show that England's street architecture is full of variety. Indeed, England's beauty is in her variety. In no other country can you travel so quickly from one sort of scenery to another. Before the war there was a disastrous tendency to try and make all our towns look the same. Burton, the Tailor-of-Taste, Stones' Radios, Dorothy Perkins and Woolworths for examples did not care so much where they were, as that you should know who they were. There may be a commercial argument to justify the desecration that commerce has wrought in our old towns. But there is no justification for a non-commercial public authority spoiling what remains to us of this once beautiful country. More damage has been done since the war by lighting authorities to our landscape than ever was done by German bombs or greedy commercialism. I suggest that all public authorities consider their town first by what it will look like by day, because it is by day that it will be most seen, and secondly what it will look like by night. No town, however new, however rebuilt, in England, deserves triangular, jazz-modern lamp-posts with lunch baskets hanging off gallows and giants' match-strikes at the base, the half-

(*Continued on page* 428)

Timber Lamp Standards

Lighting columns made of wood are not unknown, but they have not yet offered serious competition to those made of steel or concrete. The following article states a case for their adoption.

By J. R. M. POOLE,
A.R.I.B.A., A.M.T.P.I.

The use of timber as a constructional material for street lighting is not new. Although timber standards have in the past been erected in certain localities, the possibilities for wood in this field have not been generally appreciated by the designer, manufacturer or the public. This seems rather extraordinary when one considers the advantages, if only from the point of view of appearance, that wood undoubtedly offers when considered in comparison with other materials.

The Timber Development Association has long been aware of the uses for wood in the sphere of street furniture, of which lamp standards are but a part, and the results of development work undertaken during the past 12 months confirm the view that timber should be able to compete successfully with materials which have already been widely used for this purpose.

It is well known that the materials which have been commonly used for street lighting columns are cast iron, steel and reinforced concrete. As is the case with the majority of design problems, no single material is ideal; each has its peculiar advantages and disadvantages, relative to the performance conditions to which it will be subjected in practice.

The performance requirements of a material suitable for street lighting columns include :—

(a) high strength values relative to dead weight.
(b) a high degree of durability under worst conditions of exposure combined with the minimum of maintenance costs.
(c) stability.
(d) it should be easy and inexpensive to work and mould.
(e) it should be capable of being finished to provide attractive appearance.
(f) it should be low in cost.

It will readily be seen that certain species of timber would fulfil conditions (a), (b) and (e) very well by comparison with other materials, and conditions (c), (d) and (f) sufficiently well to permit the all-important question—is this the right material for the job—to be answered in the affirmative.

So far as the design problem is concerned, the subject is most interesting. It is one, however, which is by no means unique in that it is essentially a problem of satisfying quite definite performance conditions, whilst achieving a high degree of aesthetic appeal and the lowest possible cost.

Of late years there has been an increasing appreciation and awareness on the part of the general public of good and bad design; of everyday objects that look well and those that do not. This growing trend in public opinion has, amongst other things, resulted in adverse criticism of the appearance and of the design of certain street lighting standards. Some of this criticism was undoubtedly justified, and it is interesting to note that now all Class "A" street lighting column designs (i.e., of 25 ft. height) must

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be approved by a committee set up by the Council of Industrial Design before loan sanction is granted to local authorities by the Ministry of Transport.

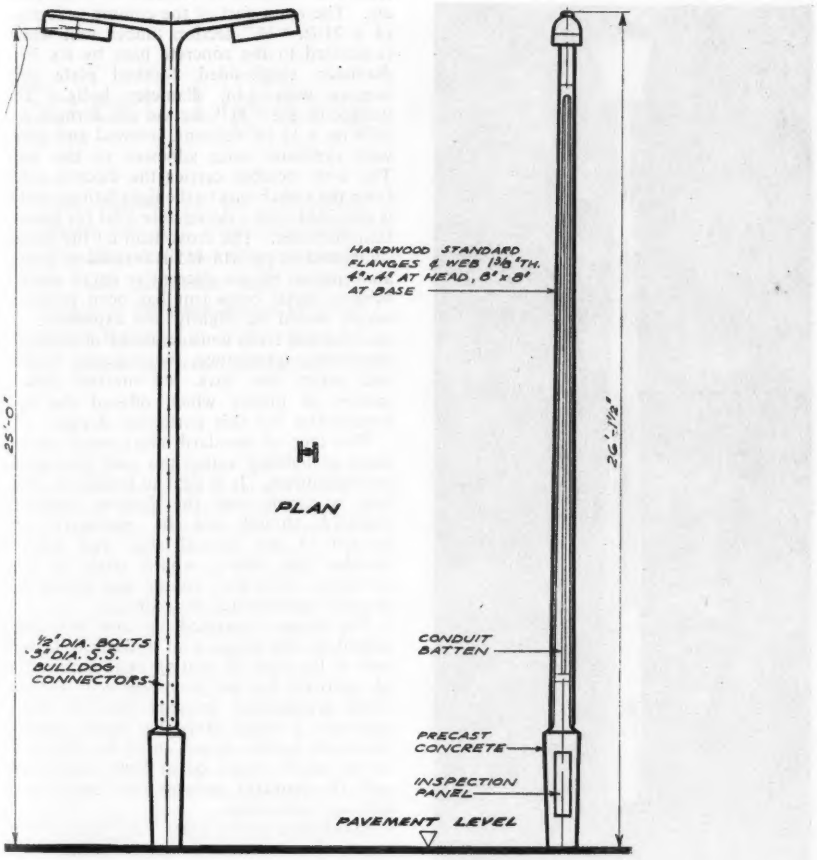
The appearance of street lighting columns is, of course, important but, whilst this aspect of the design requires due consideration, it is essential that sight should not be lost of the prime function of the column, namely that of providing an adequate support for a lighting unit which will give safe conditions of visibility for transport at night. The lighting column must be sufficiently strong to withstand imposed wind pressures, caused by wind speeds of up to 95 m.p.h. or more in certain locations, on the column and the light fittings. It is also necessary that wind pressure should not cause an undue degree of deflection or sway in the column for obvious reasons. The columns also need to incorporate in the majority of cases switch-gear requiring a space of 24 in. x 6 in. x 6 in. located at a convenient height above ground level, and to provide for covered ducts for lighting cables. These, then, are but a few of the problems which confront the designer.

Initially, the Association's activities in this field were concentrated upon the design of lamp standards of a non-standard height for a local authority in the south-west of England. This scheme had to conform with the local authority's requirements so far as appearance was concerned, and at the same time to stand up to rigorous exposure conditions experienced in the locality. These particular standards were too expensive for them to be used by other than local authorities who are prepared to pay for a special feature, and it was decided, therefore, to prepare further designs which would conform to the "standard" height for Class "A" lighting which would be competitive in price and performance with existing commercial patterns of lighting columns.

The problem of designing a 25-ft. Class "A" lighting column which could enter this highly competitive market with a good chance of success was not altogether straightforward. As has been mentioned, the primary consideration was that of evolving a design solution which would permit the fabrication of a timber lighting column, which would be low in initial capital cost, whilst at the same time involving less expenditure in transportation, erection and maintenance than the commercial patterns now available.

After careful consideration of the problem in conjunction with timber and light-

Fig. 1. *T.D.A. design for a* 25*-ft. column.*



fitting manufacturers, it was decided that a composite column in timber and reinforced concrete offered the best all-round solution. The design which is illustrated in Fig. 1 shows the scheme finally adopted for the Class "A" lighting standard. It consists of a reinforced concrete base stub approximately 7 ft. in height which houses the switch gear. The horizontal cross section of this reinforced concrete base at the switch-box level is designed to the minimum possible dimensions compatible with the requisite factor of safety for dealing with the maximum likely bending moment of 97,700 lb./in. The base is also sufficiently robust to prevent damage to the column

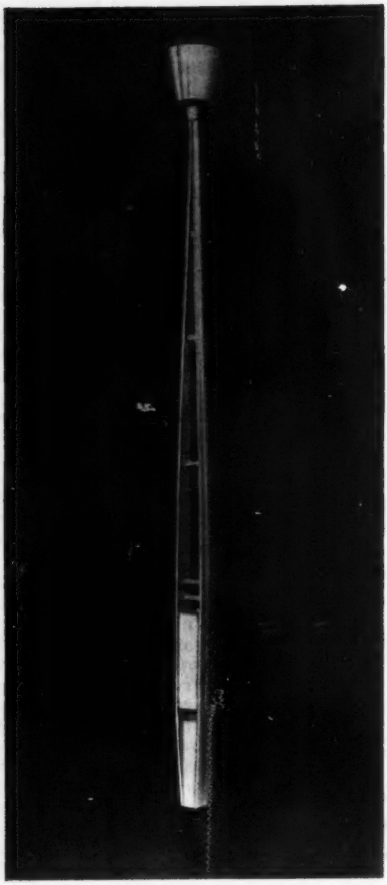


Fig. 2. T.D.A. design for a 15-ft. column.

from the bumpers of vehicles when parking, etc. The main part of the column is formed of a 21-ft. "H" section timber unit which is secured to the concrete base by six 3-in. diameter, single-sided, toothed plate connectors with ½-in. diameter bolts. The flanges of the "H" section are formed out of 8 in. x 1½ in. sections, screwed and glued with synthetic resin adhesive to the web. The web member carries the electric cable from the switch box to the light fittings, and it is provided with a detachable fillet for inspection purposes. The cross-head on the design illustrated on pp. 414-415 is formed of laminated timber, but an alternative detail using a tubular metal cross-arm has been prepared which would be slightly less expensive. It was decided from considerations of strength, durability, appearance, the requisite lengths and price, that dark red meranti was a species of timber which offered the best possibilities for this particular design.

This type of standard offers many advantages to lighting authorities and light-fitting manufacturers. It is light to transport, erection is simple, and the gantries normally required should not be necessary. If erected in the natural state and left to weather the timber would attain a most attractive silver-grey colour and would not require maintenance by painting.

The design illustrated has now been submitted to the Council of Industrial Design and at the time of writing final notification of approval has not been received. Finally, from preliminary investigations by manufacturers, it seems likely that timber lighting standards to this design could be offered at prices which would be at least competitive with the standard patterns now available to lighting authorities.

In addition to the Class "A" timber lamp standard scheme, a design for Class "B" (15 ft.) column has also been developed. This scheme, which incorporates the use of solid flanges and spacer blocks is illustrated in Fig. 3. Whilst this design offers certain advantages, it is possible that, in the case of Class "B" lighting columns, more efficient, economical and attractive schemes could be developed using solid sections built up from two or more laminates, glued and screwed together. In any case the design problems are by no means as difficult to overcome as in the case of the Class "A" lighting standard. No doubt the design flexibility which timber offers will enable local authorities to design their own Class "B" lighting columns to meet the individual character of their particular locality within the price limits normally accepted.

Street Lighting as the Policeman Sees It

The author of the following article has had wide experience of traffic control and prevention of road accidents, and is fully aware of the importance of good street lighting as a deterrent to crime and road accidents.

By CAPTAIN ATHELSTAN POPKESS* O.B.E.

Important as adequate street lighting is to the police as an aid in the prevention and detection of crime, it is of still greater significance in dealing with traffic problems and their bearing on street accidents. If, in the past 60 years or so, the advances made in street lighting have not been quite so sensational as those made in the field of transportation—horse-drawn vehicles to jet-propelled aircraft, for example—they have, nevertheless, been striking enough. For the speeding-up that has taken place in our daily lives has made it increasingly necessary that we should be able to see that much better and quicker where we are going and what we are doing. Hence, so far as public lighting is concerned, no longer is it sufficient merely to place oil lamps at principal street corners, the illumination provided by which doing little more than act as guides or pilot lamps. Thus we have seen the media of public lighting develop from oil to gas, and from gas to electricity with its many refinements.

So far as the prevention and detection of crime is concerned, as darkness is so often a help in providing cover for the thief, so light can help the policeman to catch him. For assaults and robberies do not, as a rule, take place in well-lit streets, but rather where the attacker is better able to work in the dark. The molester of women and children; the bag-snatcher, the smash-and-grab man, etc.—these and other criminal types will invariably choose conditions for their crimes where there is as little chance as possible of them being seen or themselves afterwards recognised.

Certain kinds of crimes are much more likely to take place in such conditions as those illustrated in Fig. 1, where the street lighting is so inadequate. The pictures Figs. 1 and 2 were taken at identically the same spot; No. 1 under the old system of lighting (gas), and No. 2 under the new (sodium). If the man seen standing on the side of the road had been a bag-snatcher, for instance, would the conditions illustrated in Fig. 1 or Fig. 2 have provided him with the better cover for his crime?

In this country few statistics have been kept of the interrelation of crime and street lighting. Where they have been kept in the United States of America, however, it is shown that crime increases during the hours of darkness. For example, in one city where it was decided to turn off residential street lighting at 11 p.m. to save money, no fewer than 20 houses were burgled in a single street on the first night! In another city where records were kept of crimes occurring at night, these promptly fell by no less than 40 per cent. with improved street lighting. Statistics in the United States have shown that the areas with the greatest crime density were those where the lowest standard of street lighting was maintained.

A few years ago a special crime survey was made in Cleveland, U.S.A., during which greatly improved lighting was installed in the more important business districts of the city. The object of the survey was to determine what effect light had on the incidence of crime; details were also secured of the crimes committed in the city as a whole. More than 1,000 cases of hold-up, assault to rob, burglary, car theft and pocket

* Chief Constable of Nottingham. Author of "Traffic Control and Road Accident Prevention."

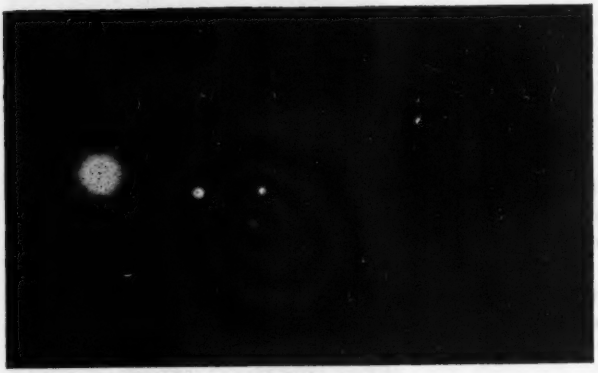


Fig. 1. *The best kind of cover for dark deeds—darkness!*

Fig. 2. *The same spot as Fig.* 1, *now illuminated with sodium lighting.*

picking were included in this study of police records. It was found that 90 per cent. of these crimes took place after dark. Furthermore, before the new lighting was installed, 17 out of every 100 crimes were committed in the district subsequently relit, although it covered less than 1 per cent. of the total street mileage. After the new lighting was installed it was significant that, in spite of a crime wave at the time, crimes in this area decreased by 8 per cent. compared with the previous year, whilst in the other districts crimes committed after dark increased by 54 per cent. In other words, after the new lighting was installed, crimes in the business section of Cleveland were only of the order of 60 per cent. of what might well have been expected had no change been made in the lighting.

It may be asked, why then did we not have much more crime of this kind during the black-out conditions in this country during the last war? Well, people stayed at home more then. Moreover, many potential law-breakers (age groups 20 to 40) were away in the Armed Forces. Just as ill-protected property invites intruders, so does a poorly lit locality offer opportunity to the criminal.

This is, of course, not a technical review of street lighting; but merely something of what a policeman sees of the problem, and how good street illumination can assist him in carrying out his duties. For example, it need not be stressed what an important part adequate street lighting can play in minimising street accidents. In this field it is of especial importance that road users should be able to see as clearly by night as by day, to which end standards of lighting should vary as little as possible in built-up areas. The writer knows of one town where there

Fig. 3. *Lights obscured by trees.*

Fig. 4. *Lighting sited to avoid obstruction from trees, which have also been suitably trimmed back.*

are no fewer than 19 different types of public lighting. Unless there is a reasonable degree of uniformity in this respect throughout the whole country, we shall continue to have the dark patches which are productive of so many street accidents. How often, for example, does the motorist find himself one moment driving along a sodium-lit road, and the next straining his eyes to see the roadway ahead of him lit by some much less efficient medium? The effect on a driver is a very marked one when passing from particularly good lighting into bad; he may experience the greatest difficulty in being able to see a pedestrian or any road obstruction. Thus he may find it necessary to hurriedly switch on his headlights; and this, again, may produce a further complication: that of causing dazzle to other and approaching vehicles if his headlights are not properly adjusted.

If an efficient and high standard of lighting could be used on all our roads, powerful headlights would not be necessary and accidents would fall proportionately. For surely it would be better to spend the money in making the street lighting efficient than to go on meeting the tremendous financial outlay and human suffering occasioned by street accidents. Ostensibly the Road Fund is for road maintenance; surely street lighting is such a charge? Yet on the very day that this article was being written the writer read in his morning paper a report of a meeting of his City Council, at which the

chairman of the Lighting Committee declared: "We were told by the Ministry that, owing to the number of applications for assistance in trunk road lighting and the small grant set aside for that purpose, it would not be possible to start work on improvements this year."

The police have always advocated that the best type of lighting should be installed, especially on the main traffic routes, and that such lights should be mounted at such a height and in such a way as to give the maximum spread of illumination and obviate shadow effects and glare. It would be interesting to know just how many accidents are caused each year because motorists are unable to see in time the hazards lurking in the opaque patches ahead of them.

Although the writer of this hastens to emphasise the fact that he is in no respect qualified to express any views on the purely technical aspect of the matter, he would not be straying too far away from his own last if he suggested that street lamps in built-up areas are not invariably set at such a height as to ensure as far as possible the joining up of all T's to form a continuous ribbon of light. And what about the obstruction to light caused by trees, as illustrated in Fig. 3? Surely such trees should either be lopped suitably or the lamps be positioned differently? Particular attention should also be paid to road crossings and junctions, which should be adequately illuminated by centrally suspended lamps, irrespective of any subsidiary lamps which may be thought necessary on the perimeter. This applies especially where there is a heavy volume of pedestrian traffic.

The Ministry of Transport will doubtless point out that their Lighting Committee

Fig. 5. Badly sited lamps giving patchy illumination, and a danger to other road-users, especially to pedestrians at this crossing.

Fig. 6. Continuation of the same road as Fig. 5, but under sodium lighting. A good example of varied street lighting on the same traffic route.

have recommended a uniform system of lighting for our main traffic routes. Then why has so little been done to achieve such uniformity? Does the fault lie with the Ministry itself in not approving suitable lighting schemes? How often when lighting engineers ask for money for this purpose are they told that there is not enough in the Treasury kitty for it? On the other hand, does the fault really lie with the local authorities, who are disinclined to implement uniformity of street lighting because of the expense involved; that too often Councillors are influenced unduly by the cost of the equipment, and give too little thought to the greater costs which may occur through personal injury or loss of life? This last may be so with a relatively few reactionary individuals, but taking things by and large, Lighting Committees of Local Authorities and their officials are only too anxious to bring about improvements in public lighting.

Doubtless one of the reasons why the lighting of main traffic routes is often so uneven is because public lighting is at present administered throughout the country by different local authorities. Although it is to everybody's advantage that there should be a suitable standard of lighting everywhere, this presents some difficulty in view of the fact that the road may pass through districts of varying rateable values; also local authorities may have different ideas in such matters as mounting heights and general layout. It is important that there should be close co-operation between authorities, in order that the lighting throughout may be adequate and reasonably uniform as well. There is no simple criterion by which the efficiency of a lighting scheme and its relative merit as compared with other schemes may be indicated. All that can be emphasised is the need for understanding of the accepted principles of lighting.

It is appreciated that the lighting problem is often emphasised by that of the optical properties of road surfaces. That the surfaces of many roads, through wear and tear, may undergo considerable changes in their optical properties; and that a system of lighting devised for a particular road surface may prove less satisfactory should the nature of the surface be changed. Moreover, resurfacing may sometimes even greatly reduce the efficiency of what had previously been a good lighting installation. Changes in the optical properties of road surfaces are greater on the rougher type of surface dressing such as asphalt and macadam than with smoother surfaces and stone setts. Where concrete road surfaces are used, heavy traffic on them has the effect of greatly increasing the reflecting properties of the road. Recent experiments made in France have shown that a compressed asphalt road surface requires only half the power to light it that a road with a bituminous surface does.

The climatic conditions should always be taken into account when installing new lighting systems. A shower of rain, and even a heavy dew, may materially affect visibility under artificial lighting. When new street lighting is being planned for any particular area, besides the opinion of highway engineers that of the police should be sought, as the matter of street lighting is so closely allied to accident prevention.

Badly designed street lighting might produce glare. It is only possible to see an object when there is sufficient contrast between it and its background. The effect of glare, besides the discomfort it causes, is to decrease the contrast necessary to reveal the object and so diminish the effectiveness of a lighting installation. It is necessary to control the direction and intensity of the light to promote sharper silhouettes with a minimum of glare.

Another problem which from now on will engage the attention of lighting engineers will be the flashing light at pedestrian crossings. In Great Britain there are 12,000 such crossings, so that the results of the present experiments are awaited with much interest. Although there can be little doubt as to the usefulness of these new indications of pedestrian crossings, all the same whenever possible a lamp standard should also be so sited that the light fully illuminates the crossing to give drivers and pedestrians alike a greater margin of safety than hitherto existed.

To sum up this question of street lighting as the policeman sees it. First, it should be such as to create the best conditions for traffic visibility. Second, it should assist as much as possible in the prevention of crime and in other ways useful to the police in carrying out their duties to the public. Third, for the convenience of citizens as they go about their lawful business. And fourth, a public lighting system should be such as to give any town as pleasing an appearance at night as possible. The last is less obvious than the first three, yet why shouldn't we all take the greatest possible pride in having our cities well lit? Besides being good for business, is it not also an outward and visible sign of the progressiveness of our local authority?

DANGER BY NIGHT

There is a pedestrian in each of these photos

AN ANALYSIS of adult road casualties in 1952 reveals that, on average :—

80% more road deaths occurred,

150% more pedestrians were killed,

100% more pedestrians received serious injuries

during each hour between dusk and midnight than during each hour of daylight.

Road accident statistics since 1938 reveal that, with the changing pattern of road use, the proportion of night to day accidents is increasing, despite the availability of greatly improved systems of street lighting in recent years.

The modernisation of street lighting is falling short of the need.

British road traffic is the densest in the world, and is increasing. It must be matched by the best street lighting.

ELECTRICITY *a power of good*

FOR STREET LIGHTING

The British Electrical Development Association, 2 Savoy Hill, London, W.C.2

Fluorescent Street Lighting in the United States

Report on the present position of fluorescent street lighting in the United States, prepared by a special committee of the American I.E.S. under the chairmanship of Mr. W. H. Edman.

In this age with its complexities of modern surface transportation, it is only natural that fluorescent lamps are under constant study to determine if they will serve as another helpful tool to provide better illumination and visibility conditions for our streets.

Most of the fluorescent street lighting installations in the United States are, in general, considered experimental. However, it appears that this source is being considered quite seriously for specialised applications such as tunnels, under-passes, low-mounted parapets, airport loading areas, and business shopping centres.

Early post-war experiments with fluorescent street lighting were carried on by leading equipment manufacturers, municipalities, and electric utility companies in co-operation with the I.E.S. Street and Highway Lighting Committee. Test installations in Detroit, Cleveland, and Schenectady were first made in 1945. The lamps used then were 4-ft. or 8-ft. tubes installed in open porcelain-enamel reflectors. Since then a new lamp has been introduced. It is a 100-watt 6-ft. T-12 Rapid Start lamp operating at one ampere and generating approximately 5,000 lumens over a wide range of ambient temperatures. It must be remembered that in the United States there is a wide range in latitude as well as large seasonal changes in temperatures. This practical operating problem obviously had to be solved in order to gain general acceptance.

Since the miles of streets to be lighted in this country are great, we are very

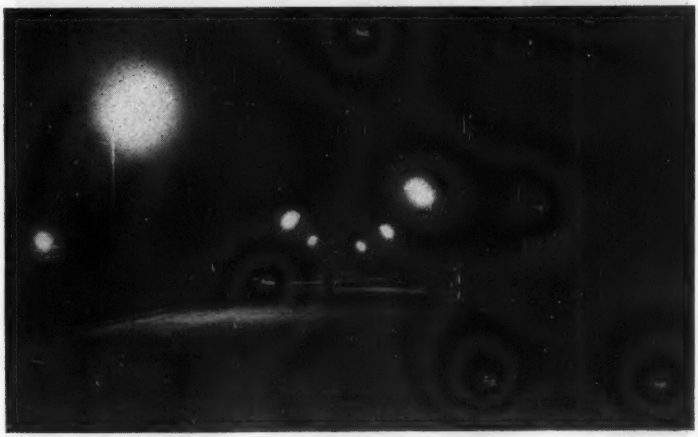


Fig. 1. *Installation at Cleveland, Ohio, of* 2-*lamp fittings tilted at* 45 *deg.*

Fig. 2 (a). Installation at Detroit, Michigan, dry road surface.

Fig. 2 (b). Same installation as above under wet road conditions.

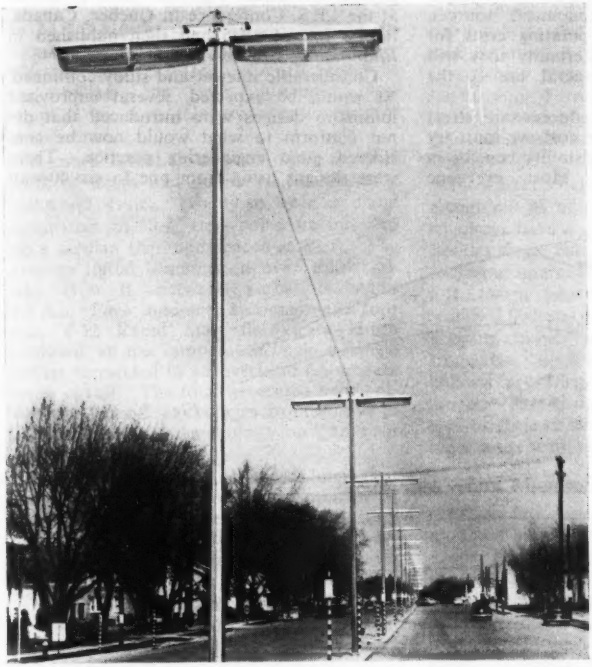


Fig. 3. Installation at Oakwood, Ohio. Each lantern contains four 6-ft. T-12 rapid-start lamps; light output 20,000 lumens. Mounting height 30 ft., spacing 90 ft., road width 100 ft.

Fig. 4. Oakwood installation at night. The average illumination is 1.7 ft.cds.

cost-conscious. Mercury-vapour and incandescent filament lamps are at present still considered the most economical sources, considering owning-and-operating costs for lamps and equipment. Certainly they will remain in their wide general use in the foreseeable future.

In order to appraise fluorescent street lighting in terms of higher cost, we must try to evaluate comfort and visibility benefits in terms of such cost. Most everyone recognises such basic and apparent advantages as:—

(1) Elongated light source.
(2) Low luminaire brightness.
(3) Better visibility on wet roadways.
(4) More comfort.
(5) Newness and novelty.
(6) Long lamp life.

Likewise, some basic disadvantages are recognised, namely:—

(1) Higher installation and maintenance costs.
(2) Large and bulky luminaires.
(3) Poor daytime appearance (size).
(4) Lack of lateral control, with limitation to broad light distribution only.

The City of Detroit, Michigan, was the first large municipality to experiment with fluorescent street lighting early in 1945. Shortly following, two additional installations were made in Cleveland, Ohio, and Schenectady, New York. The Research Sub-committee of the I.E.S. Street and Highway Lighting undertook studies of these installations. A report entitled "Studies of Fluorescent Street Lighting" was presented at the I.E.S. Conference in Quebec, Canada, in the fall of 1945 and then published in *Illuminating Engineering*, February, 1946.

Considerable interest and study continued. As would be expected, several improvised luminaire designs were introduced that did not conform to what would now be considered good engineering practice. There were designs using from one to six 40-watt fluorescent lamps mounted vertically and radially at comparatively low mounting heights. The lamps were either exposed or enclosed within an opal glass or plastic cylinder, producing a symmetric light distribution laterally, but having no vertical control. Only a few actual installations were made as there was little acceptance of this highly inefficient form of fluorescent lighting.

In 1950 Detroit made its second experimental installation of 24 units. These units had improved distribution characteristics over previous designs. The V-shaped luminaires were mounted at 25 ft. in a horizontal plane with the apex pointing towards the centre of the roadway. The luminaires were spaced 140 ft. staggered on a 46-ft. wide street. Each luminaire consisted of two separate aluminium reflector units 8 ft. long joined together at a lateral angle of 30 deg. with two 96-in. T-12 lamps mounted in each reflector. At 430 milliamperes, the four lamps together gave approximately 19,000 lumens initial output.

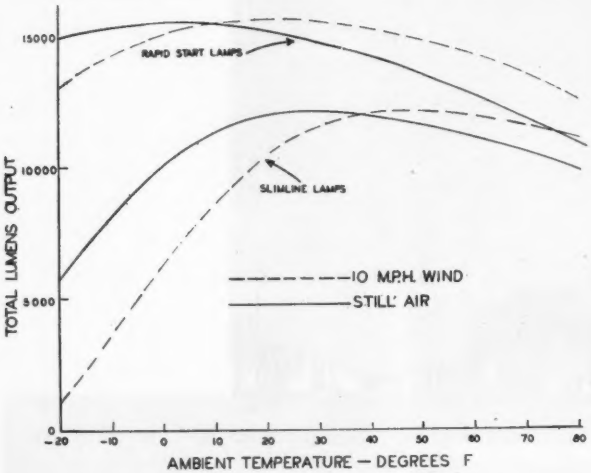


Fig. 5. Performance characteristics of rapid-start and slimline lamps.

This produced an average illumination of one foot-candle. Additional light output up to 24,000 lumens could be obtained by increasing the current input to the lamp up to 600 milliamperes. The primary power to the ballast for each luminaire was supplied by a 6.6-ampere constant-current transformer.

A more recent installation, with a newer form of lamps and luminaires, is in use at Oakwood, Ohio. Twenty-six twin-mounted luminaires on 30-ft. steel poles are installed on a median strip and spaced at 90 ft. The average initial illumination over this roadway (100 ft. between kerbs) is about 1.7 ft.c. Each luminaire accommodates four 6-ft. T-12 Rapid Start fluorescent lamps operated at one ampere through a single ballast connected to an overhead 6.6-ampere series circuit. The total generated light output, per luminaire, averages from 20,000 to 24,000 lumens, depending on ambient temperatures.

The low brightness of these luminaires reduces discomfort glare in the opinion of most observers, but there is some disagreement as to any reduction in veiling glare. Some experienced observers have expressed the opinion that veiling glare is worsened.

There is a distinct improvement in roadway brightness patterns, particularly on wet nights, but under heavy traffic conditions this advantage may not be important.

Tunnels and Underpasses

The most notable installation of tunnel lighting with fluorescent lamps is the twin tube Brooklyn-Battery tunnels in New York City which were reported in *Illuminating Engineering*, November, 1950. The public's reaction to this installation has been very good, and this method of application continues to get greater consideration.

Fluorescent lighting has also come to be recognised as applicable to underpasses, of which we have a great many in this country. Besides single bare lamps there are available enclosing luminaires using either one or two 6-ft. lamps generating totals of approximately 5,000 and 10,000 lumens respectively. Varying lumen outputs can be obtained from the single-lamp units by suitable ballasts operating at two or three current ranges. The elongated sources with their low brightness factor renders these fluorescent units well suited to such applications.

Low Mounted Parapet Applications

While few installations are in use, low-mounted single-lamp fluorescent units with proper light control offer a solution to roadway lighting from parapet locations where local conditions prohibit the use of overhead roadway-lighting equipment. The most notable installations are at the Shasta Dam, California and Grand Coulee Dam,

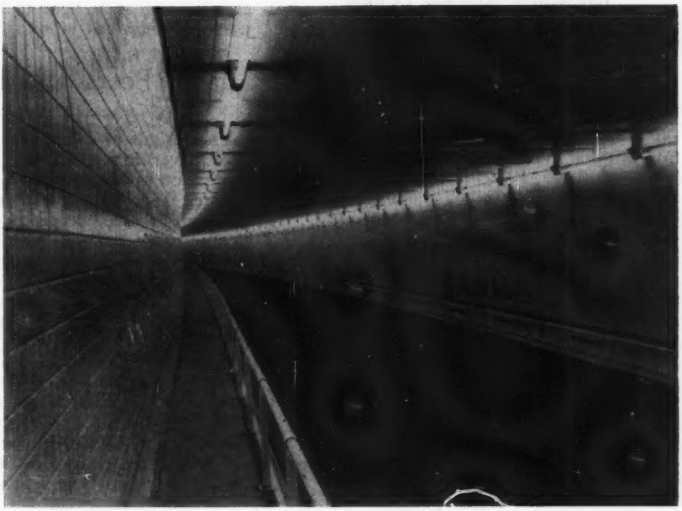


Fig. 6. The Brooklyn Battery Tunnel. Lighting is from continuous lines of 6-ft. T-8 slimline lamps.

Fig. 7. Business centre at Lydonville, Vermont. Each lantern contains four 8-ft. T-12 slimline lamps.

Washington, which were reported in *Illuminating Engineering*, January, 1950. Incidentally, since these installations were made, the roadways across the dams have been closed for security reasons. Therefore there is little or no operating experience to report at this time.

Intersection Highway Lighting

The State of California has given a great deal of consideration to intersection lighting, particularly in rural areas. One of its biggest problems has been the lack of background brightness, which gives a high contrast with the luminaire brightness. The supervising engineers have felt that light directed away from the intersection was largely wasted and that it would provide more effective utilisation of the flux to direct as much as possible towards the flow of traffic. Thus, the pavement brightness would be increased toward the oncoming motorist.

In an attempt to achieve this type of lighting, they have built some special experimental luminaires consisting of an 8-ft. slimline tube mounted in a parabolic reflector. Two of these are joined end-to-end giving a total luminaire length of 16 ft. This long light source is especially effective when the road surfaces are wet. Of course, high installation costs and the rather unwieldy and bulky luminaires are the chief objections.

To date, our limited experience with fluorescent sources indicates that this type of lighting may find a definite place in certain future street lighting applications. Present objections to the high cost of installation and maintenance may, in the future, be overcome by technical advances, especially if such lighting be evaluated in terms of improved visibility and comfort.

Lamp Posts and Landscape

(*Continued from page* 412)

baked designs of half-trained engineers who have never looked at the remains of our civilisation as exemplified in our street architecture. I do not condemn concrete as a material, though I prefer steel and cast-iron. Concrete *can* be made slender and graceful. Cast-iron and steel standards should be painted grey, with either a little yellow or a little blue in it, so that they may be less obstrusive than when painted the dismal green which is meant to look like nature, and doesn't. On the whole, however, I think that whenever possible old lamp-posts should be retained. We are used to them. They are part of our street landscape and most of them are well proportioned in themselves and are related to the human figure as are the houses in which we live.

Street Lighting Progress in South-East Scotland

This article deals chiefly with progress in lighting main roads in the area of the South-East Scotland Electricity Board since 1948.

The nationalisation of the electricity and gas industries has facilitated the co-ordination of statistics relating to street lighting, and although statistics are not readily available giving detailed information of all street lighting projects, a general indication can be given of the development which takes place year by year.

Considerable progress has been, and continues to be, made in the South East Scotland Electricity Board area. The information in this article largely relates to development since the end of the war, but particularly about the period from 1948 when the Electricity Boards took over the electricity undertakings.

The Board's area comprises some 3,160 square miles of territory, and includes the City of Edinburgh and the large burghs of Falkirk, Stirling, Dunfermline and Kirkcaldy. Most of the population is in the central and northern part of the area, which includes, in addition to the City of Edinburgh, the eastern section of the industrial belt of

Fig. 1. *Installation of G.E.C. vertical* 400-*w. mercury lantern on the Tweed Bridge on Route A.*1 *at Berwick-on-Tweed.*

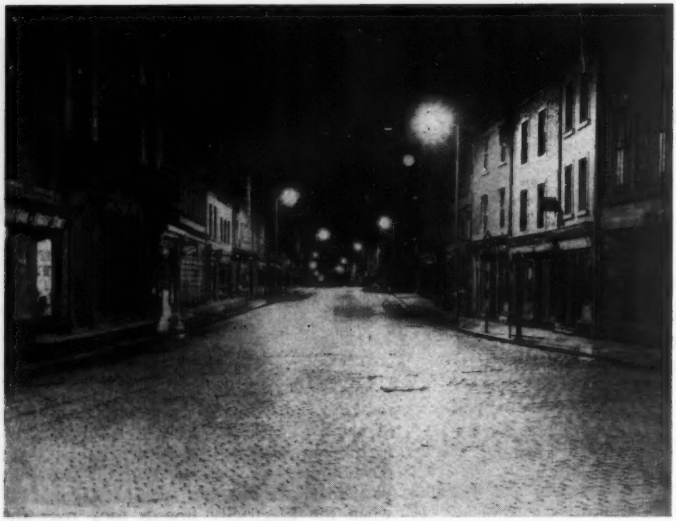


Fig. 2. Revo 400-w. mercury installation on Route A.7 at Hawick.

Scotland and the extensive Fife, Stirling and Lothians coalfields. The southern part—some 2,000 square miles in extent—is largely rural, and mostly hill sheep farming country with a sparse population ; but it also includes the home of the Scottish woollen industry, which gives employment to about 7,000 people in and around Galashiels, Hawick and Selkirk.

By arrangement with the North Eastern Electricity Board, supplies are afforded in the borough of Berwick-upon-Tweed and in the northern part of the county of Northumberland, covering an area of 152 square miles.

The following figures show that since 1948 the number of street lamps in the area has almost doubled and the load has increased by more than 100 per cent.:—

	1948	1953
Number of street lamps ...	18,900	37,300
Load in kw.	2,640	5,450

Much of this increase has been assisted by the extension of the Board's distribution system during the past five years. Further rural electrification will take supplies of electricity to villages hitherto without gas or electricity, and this will mean the inauguration of further lighting schemes. New housing estates have, of course, contributed largely to the increase in number of street lamps.

The responsibility for street lighting in Scotland is somewhat different from that in England, as for the purposes of local government Scotland is divided into counties, counties of cities, large burghs, small burghs and districts. These are administered by county councils, town councils and district councils respectively. The chief difference lies in the county councils who, when requiring to provide lighting in a landward part of the county may form a "special lighting district." This can also be done by the county council at the request of any one or more district councils within their area. The cost of street lighting is then defrayed by levying a rate on the lands and heritages in the special districts. Where lighting is required in an area not included in a special lighting district, then the cost is met by a rate levied in equal proportions on owners and occupiers of property throughout the whole landward area of the county, exclusive of any special lighting district.

Of the types of installations in use, discharge lighting is favoured by the majority of authorities, with perhaps a balance swaying towards the use of sodium discharge lamps. Some towns are favouring the use of fluorescent tubes for the lighting of the shopping areas, with sodium for main approach roads. An example of this combination is now in use in Bathgate, and it is understood that a similar arrangement is

(*Continued on page* 434)

Survey of Class 'A' Road Lighting Schemes installed in the Area of the South East Scotland Electricity Board since 1st April, 1948

(1) Local Authority and Location	(2) Surveyor, Engineer or Lighting Inspector	(3) Main Contractor	(4) Light Source	(5) Lantern	(6) Column
BERWICK-ON-TWEED M.B. ...A.1	John Armitage	G.E.C. Ltd.	75 x 400w H/Mercury & V/Mercury	G.E.C. Z8432 Viatron & Special Vertical Lanterns	Concrete Utilities '3 DN' & Special Concrete Columns
COLDSTREAM T.C. ...A.698	William Dickie	Metro-Vick Ltd.	10 x 300w Filament	Metro-Vick GR10C Gower	Stanton Iron-works Concrete '6B' & '7D'
DUNS T.C. ...A.6105	T. Ainslie	Metro-Vick Ltd.	15 x 250w H/Mercury	Metro-Vick TD19/1 Trafford	Concrete Utilities Concrete '3D' & '4D'
GALASHIELS T.C. ...A.7	R. G. Bruce (Surv.) R. G. Nicholson (Inspector)	(Out to tender)	77 x 400w H/Mercury		
HAWICK T.C. ...A.7	George Bee	Local Authority	21 x 400w H/Mercury	Revo G.12628	Stewarts & Lloyd Steel
INNERLEITHEN T.C. ...A.72	Wm. F. Thomson	S.E.S.E.B.	15 x 250w H/Mercury	G.E.C. Z8431 Dioptrion	Stanton Iron-works Concrete '6B'
KELSO T.C. A.6089; 698; 699; B.6532	Wilbert C. Neil	Metro-Vick Ltd.	64 x 250w H/Mercury	Metro-Vick TD.20/1 Trafford II	Springbank Quarry Concrete 'H'
		J. Kilpatrick & Son Ltd.	57 x 250w V/Mercury	G.E.C. Z8134B Difractors	Concrete Utilities Concrete '3 DN'
PEEBLES T.C. ...A.72	E. S. Duncan	G.E.C. Ltd.	52 x 300w Filament	G.E.C. Z5128B Oxford	Stanton Iron-works Concrete '6B.' Springbank Quarry Concrete 'H'
SELKIRK T.C. ...A.7	Thos. Beattie	G.E.C. Ltd.	12 x 250w H/Mercury	G.E.C. S8431 Dioptrion	Concrete Utilities Concrete '3 DN'
BATHGATE T.C. ...A.89	James Spalding	Revo Electric Co., Ltd.	38 x 2/80w 11 x 3/80w Fluorescent 88 x 140w Sodium	Revo C.12492 Revo C.12493 Revo	Revo 'Clacton' Steel.

(1)	(2)	(3)	(4)	(5)	(6)
Bo'NESS T.C. ...A.904	Geo. J. Renton	Local Authority	24 x 140w Sodium	G.E.C. Z9450 Enclosed 'Perspex'	G.E.C. Steel Z4015
CLACKMANNAN C.C.:— Clackmannan ...A.907	W. M. Condie (Master of Works)	A. M. Todd	25 x 140w Sodium	G.E.C. Z9450 Enclosed 'Perspex'	Springbank Quarry Concrete 'H'
CLACKMANNAN C.C.:— Sauchie ...A.908	W. M. Condie (Master of Works)	A. M. Todd	23 x 140w Sodium	G.E.C. Z9450Enclosed'Perspex'	Springbank Quarry Concrete 'H'
CLACKMANNAN C.C.:— Devonside ...A.908	W. M. Condie (Master of Works)	A. M. Todd	10 x 140w Sodium		
GRANGEMOUTH T.C. ...A.904/5	John C. Wallace	Metro-Vick Ltd.	76 x 140w Sodium	Metro-Vick SY93/2 SO. Fifty	Springbank Quarry Concrete 'C'
KILSYTH T.C. ...A.802	John Milne	Metro-Vick Ltd.	65 x 140w Sodium	Metro-Vick SY93/2 SO. Fifty	Springbank Quarry Concrete 'C'
LINLITHGOW T.C. ...A.9	James Flett	Thos. Laurie & Co., Ltd.	57 x 250w H/Mercury	G.E.C. Z8431 Dioptrion	G.E.C. Steel Z4015
STIRLING C.C.:— Lauriston & Polmont...A.9	T. C. McGlashan	Thos. Laurie & Co., Ltd.	63 x 140w Sodium	G.E.C. Z9450 Enclosed 'Perspex'	G.E.C. Steel Z4015
STIRLING T.C. ...A.9	D. B. Marrs	Local Authority	4 x 2/80w Fluorescent 8 x 3/80w Fluorescent	Revo C.12492 B.T.H. SLB.751	Catenary Suspension
WEST LOTHIAN C.C.:— Winchburgh ...A.9	J. Splitt (Inspector)	Thos. Laurie & Co., Ltd.	27 x 140w Sodium	G.E.C. Z9425 Open Refractor	Concrete Utilities Concrete '3 DN'
BONNYRIGG T.C. ...A.6094	E. Docherty	Wm. A. Smith & Co.	80 x 140w Sodium	G.E.C. Z9450 Enclosed Perspex	Springbank Quarry Concrete 'H'
DALKEITH T.C. ...A.68/A.7	John Lawrence	Metro-Vick Ltd.	47 x 140w Sodium	Metro-Vick SY93/2 SO. Fifty	Springbank Quarry Concrete 'C'
MUSSELBURGH T.C. ...A.1	W. Y. Dryburgh	J. Kilpatrick & Son Ltd.	133 x 140w Sodium	G.E.C. Z9450 Enclosed 'Perspex'	Springbank Quarry Concrete 'H' and Local Authority Tram Standards and brackets

(1)	(2)	(3)	(4)	(5)	(6)
MUSSELBURGH T.C. ...A.1	W. Y. Dryburgh	Metro-Vick Ltd.	15 x 140w Sodium	Metro-Vick SY93/2 SO. Fifty	Springbank Quarry Concrete 'H'
ANSTRUTHER T.C. ...A.917	C. C. Henderson	G.E.C. Ltd.	50 x 250w H/Mercury	G.E.C. Z8431 Dioptrion	G.E.C. Steel Z4015
BUCKHAVEN & METHIL T.C. ...A.955	T. L. Brown Thomson	Local Authority	116 x 250w V/Mercury	G.E.C. Z8134B Difractor	G.E.C. Steel Z4015
DUNFERMLINE T.C.:— Rosyth ...A.985	W. R. B. Drysdale	Revo Electric Co., Ltd.	47 x 140w Sodium	Revo C13194	Revo Steel 'Monarch'
FALKLAND T.C. ...A.912	George Mark	Metro-Vick Ltd.	25 x 140w Sodium	Metro-Vick SY93/2 SO. Fifty	Stanton Iron-works Concrete '6B'
FIFE C.C. Newburgh ...A.912	T. McCallum	Metro-Vick Ltd.	35 x 140w Sodium	Metro-Vick PRA93/6 Poplar	Stanton Iron-works Concrete '6B'
FIFE C.C.:— Coaltown of Wemyss...A.955	T. McCallum	Metro-Vick Ltd.	26 x 140w Sodium	Metro-Vick PRC93/6 Poplar	Stewarts & Lloyds Steel Gb.501
INVERKEITHING T.C. ...A.90/92	Thomas Cruickshank	Eastern Electric Service	87 x 250w H/Mercury	G.E.C. Z8432T. Viatron	G.E.C. Steel Z401S
KIRKCALDY T.C. ...A.955	Lindsay Morgan (Ltg. Supt.)	Local Authority	21 x 500w Filament	G.E.C. Z5128B Oxford	Stanton Iron-works Concrete '6B'
LEVEN T.C. ...A.915	A. V. Samuel	(Out to tender)	39 x 140w Sodium		
LOCHGELLY T.C. ...A.910	Thomas Dickson	Revo Electric Co., Ltd.	20 x 2/80w Fluorescent	Revo C.12492	Revo Concrete 'Phidias' & 'Myron'
NEWPORT T.C. ...A.92/914	J. D. Morton	G.E.C. Ltd.	58 x 250w H/Mercury	G.E.C. Z8431 Dioptrion	G.E.C. Steel Z4015
PITTENWEEM T.C. ...A.917	Wallace A. Robertson	G.E.C. Ltd.	27 x 140w Sodium	G.E.C. Z9450 Enclosed 'Perspex'	G.E.C. Steel Z4015
ST. ANDREWS T.C, ...A.91/92/ 94/915/918	R. Buick	S.E.S.E.B.	18 x 400w 14 x 250w Mercury	Edison Swan 'Bi-way' ES3222.	Stewarts & Lloyds Steel Gb.502
TAYPORT T.C. ...A.945	Andrew Peter	Metro-Vick Ltd.	33 x 140w Sodium	Metro-Vick PRC93/6 Poplar	Concrete Utilities Concrete '3 DN'

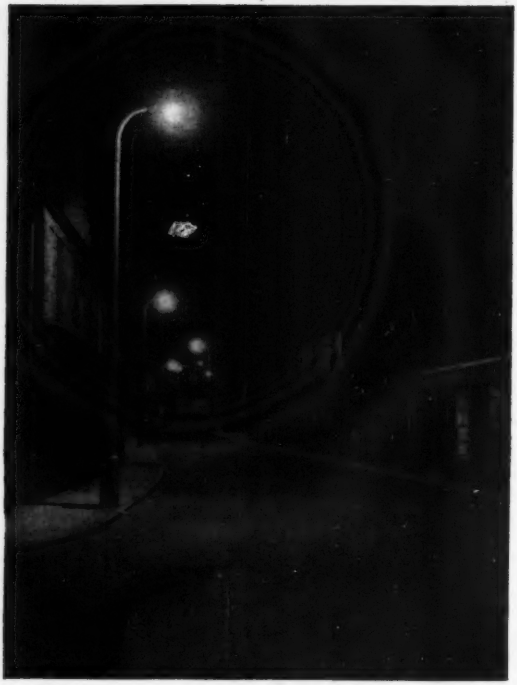


Fig. 3. Metro-Vick "SO-Fifty" 140-w. Sodium installation on Route A.802 at Kilsyth.

(*Continued from page* 430)

contemplated for trunk road (route A.90) in Cowdenbeath, Fifeshire.

Columns and brackets have been invariably the concrete type, but a preference towards steel is noticeable now that this material is more available. The control of installations varies somewhat, depending upon local distribution characteristics; the types in use including individual time switches, group control by fifth and sixth cores, special street lighting cables and a few installations of centralised control. In Edinburgh a number of D.C. bias units has been in use for some time, while Falkirk street lamps are controlled by a Rythmatic Control System. Dunbar, on the east coast, also favours the centralised system of control.

Turning to the actual street lighting schemes on Class A roads completed by lighting authorities since vesting date, the accompanying table shows, in brief, work completed and now in hand, the locations of the schemes being indicated on the map of the Board's area.

In the Border towns in the southern part of the area a number of new electrical installations are now in use in the wool-weaving towns of Hawick, Selkirk, Galashiels, Innerleithen and Kelso, which lie in the beautiful Scott country at the west of the Tweed Valley. At Coldstream, near the site of Flodden Field, a new installation has recently been completed and towards the east coast in England there is an extensive new scheme at Berwick-upon-Tweed, where the old walls of the castle still stand, a reminder of the signing by King Charles of the ignominious "Pacification of Berwick," during the events which led to the Civil War. An interesting feature of the installation at Berwick is the use of vertical cylindrical lanterns, housing 400-watt vertical-burning mercury lamps, on the Royal Tweed Bridge. Duns is well favoured with modern electric street lighting consisting largely of mercury discharge for both Group A and B roads. Peebles have now started a development scheme.

Approaching Edinburgh, the capital of Scotland, the town councils of Bonnyrigg, Dalkeith and Musselburgh have introduced

(*Continued on page* 444)

Street Lighting in Northern Ireland

During the last few years considerable progress has been made in the improvement of street lighting in Northern Ireland. The following article describes some of the new installations.

Northern Ireland is unique in the fact that it has some of the largest fluorescent street lighting installations in the British Isles and Eire.

Northern Ireland is a separate area of government created by the Government of Northern Ireland Act, 1920, which provided for the setting up of a separate Parliament for Northern Ireland, within the United Kingdom. It comprises the six Parliamentary Counties of Antrim, Armagh, Down, Fermanagh, Londonderry and Tyrone with the two Parliamentary Boroughs of Belfast and Londonderry. The total population of the province is under 1,500,000; the people are warm-hearted, hardworking and hospitable with a culture and way of life of their own to which the visitor rapidly reacts. Let us tour this land of character, with its variety of towns and old-world countryside.

Nationalisation does not apply in Northern Ireland and there are three separate undertakings, the Belfast Corporation Electricity Department with an area of supply of approximately 83 square miles and serving a population of approximately

Fig. 1. *Installation of M'e t rovick "Trafford" lanterns with* 250*w. mercury lamps in the Finaghy district of Belfast.*

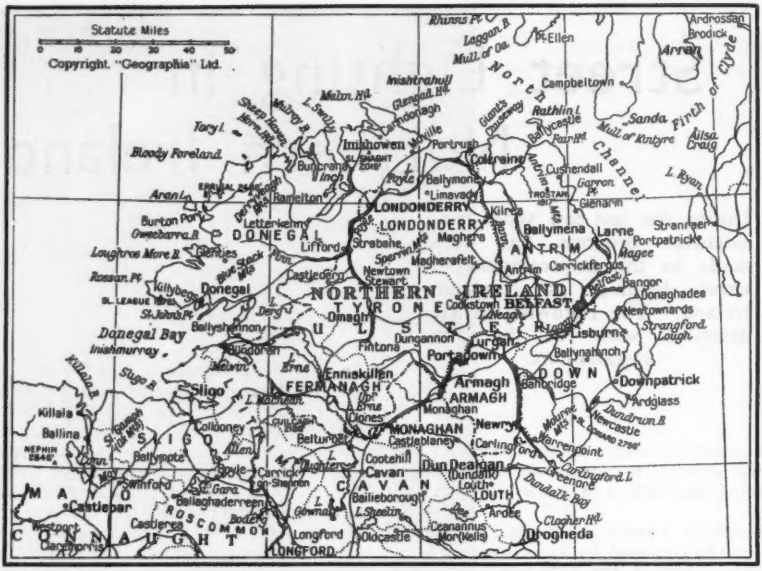


Fig. 2. Map showing principal towns of Northern Ireland.

510,000, the Londonderry Corporation Electricity Department serving approximately 50,000 population with an area of supply of 3½ square miles, and the Electricity Board for Northern Ireland with an area of supply of approximately 5,200 square miles and serving a population of about 820,000.

Belfast City (population 450,000) still has a very large proportion of gas street lighting, approximately 17,000 gas lamps to 3,000 electric. The 3,000 electric units are chiefly 250/400-watt mercury vapour lamps on the ring roads and 80-watt MB/V units on the class "B" installations for housing estates. The class "A" lighting is done with G.E.C. "Watford" lanterns or Metropolitan-Vickers "Trafford" lanterns, mounted on steel poles; the class "B" lighting units are either mounted on overhead line poles, concrete columns, or steel poles. As the city transport consists of a large proportion of electric trolley buses, their overhead line poles provide ready-made suspensions for the street lighting. At the time of writing the Corporation is experimenting with fluorescent street lighting in the wake of many of the Ulster provincial towns.

Taking the Dublin road out of the city one enters the rural district of Lisburn and passes through six miles of heavily trafficked concrete road to the town of Lisburn (population 15,000), famous for damasks and the fact that it had the first fluorescent street-lighting installation alight in Northern Ireland (February 6, 1950). However, as the six miles of road to Lisburn from the Belfast boundary passes through the rural district it was not possible financially to install class "A" fluorescent lighting, and a compromise was reached by using 125-watt mercury-vapour units. The Electricity Board for Northern Ireland prepared a scheme using the existing overhead line pole network, moving some of the poles to bring the lighting of the winding road into line with the B.S. Code of Practice. The road width varies between 30 and 35 ft. The lighting units consist of heavy duty galvanised Siemens brackets and control gear boxes mounted at the maximum possible height of 21 ft. with an E.L.E.C. (Siemens Marton Sieray) bowl refractor lantern, and affords reasonably safe conditions for this the most heavily trafficked road in Ireland. The units are spaced at 40 to 50 yds. apart. Halfway to Lisburn the road passes through the small township of Dunmurry, where the residential roads are illuminated by Siemens

Fig. 3. Siemens fluorescent units at Lisburn.

80-watt mercury-vapour units mounted on the overhead line pole network.

On arriving at the Lisburn town boundary the mercury vapour lighting gives way to four miles of Siemens class "A" fluorescent street lighting comprising 176 units in all. Originally Lisburn was illuminated by gas but in late 1949 tenders and schemes were invited by the Council for relighting the whole town. Towards the end of January, 1950, the erection work on the main road lighting together with the installations on the minor roads of some 450 100-watt filament lamp units began. Concrete Utilities 3DN and Avenue 2D columns manufactured in Hilton red sand and ground polished finish were used. The A.T.M. system of ripple control was also installed. The erection work was completed in the record time of sixteen weeks using a large percentage of local labour. It should be borne in mind that all the material had to be shipped from England and allowances made for the customary winter gales and weather; nevertheless, the official switch-on date of May 25, 1950, was adhered to. Throughout, a spacing of 40/45 yards was adopted for the class "A" and class "B" lighting, special attention being paid to the numerous bends and junctions in this busy market town. The Siemens class "A" 3-lamp lantern used incorporated several new features such as the four-bolt method of fixing and the internal cantilever bracket, as well as a highly efficient optical system of aluminium reflectors, the whole being totally enclosed by means of "Perspex" doors.

Turning southwards through Lisburn one heads towards Hillsborough, a small township approximately three miles away. The road is illuminated by Siemens 125-watt mercury vapour lanterns mounted on wood transmission poles although in the township itself they are mounted on the walls to avoid obstructing the narrow pavements. Hillsborough is proud of the fact that the town contains the official residence of the Governor of Northern Ireland and has been honoured by several visits by members of the Royal Family.

Proceeding still further towards the Border and Dublin we pass through Dromore and Banbridge, rather sparsely illuminated by 250-watt mercury vapour units until we arrive at the town of Newry (pop. 14,000). In 1951 Newry installed 55 Revo fluorescent lanterns (3 x 80-watt) on Revo concrete columns and equipped the new housing estate of Rooney's Meadow with 52 Siemens 2 x 40-watt fluorescent side street lanterns on Concrete Utilities Avenue 2D columns erected at the back of the pavements to avoid obstruction. These two schemes so pleased the Council and residents that in late 1951 scheme and tenders were invited for converting the whole of the remaining street lighting (gas) to fluorescent. The contract was awarded to Siemens, and in the spring of 1952 erection work began on 90 class "A" 3 x 80-watt units and 460 class "B" 2 x 40-watt units. The scheme was completed in October, 1952, and Newry is the only town in the United Kingdom to have its streets totally illuminated by fluorescent lamps. The class "A" lanterns used were a modified version of the Lisburn lanterns,

the whole of the control gear being mounted in a cast aluminium box at the pole end of the lantern, but retaining the well-tried cantilever bracket and the optical system. The roads, generally speaking, are tarmacadam and vary in width from 20 to 40 ft. Whilst in Lisburn "natural" fluorescent lamps were used, the people of Newry preferred the "warm white" type; in both cases instant start control gear was used. The erection work on this contract was carried out entirely by local labour under the supervision of Siemens engineers and the engineers of the Electricity Board for Northern Ireland.

On the fringe of the Mourne Mountains lies the pleasant seaside town of Warrenpoint (pop. 3,000) facing the Eire Republic town of Omeath, a mile distant across the waters of the Carlingford Lough. The approach to Warrenpoint is by a concrete road illuminated by Siemens class "B" 2 x 40-watt fluorescent lanterns mounted on the existing wooden overhead line poles, giving way to class "A" fluorescent lighting in the town itself. Warrenpoint is stated to have the largest town square in Northern Ireland, and this is illuminated by Siemens Double Arm fluorescent units. This scheme was carried out and erected by Siemens in 1951.

Retracing our steps back to Newry, we head north-west to Armagh, known as the Cathedral City. Armagh is the ecclesiastical capital of Ireland and is famous for two cathedrals, an observatory, and Royal School. The town is illuminated by Siemens 250-watt mercury lanterns, some mounted on Stanton concrete columns and others mounted on the existing overhead line poles. In addition, a number of the side roads are illuminated by 80-watt MB/V units.

Turning back in the direction of Belfast one arrives first at the prosperous linen-manufacturing and rose-growing town of Portadown (pop. 17,000). The main road surfaces are concrete, and the lighting is by means of Siemens 250-watt mercury vapour lanterns on spun concrete columns at a mounting height of 25 ft. and spaced at 40/50 yds. in staggered formation. In addition, a number of 125-watt mercury vapour equipments are used, mounted on the existing wood poles as in Lisburn and other towns. This scheme was carried out in 1949 as was the installation in the next town, Lurgan, which is also a famous linen-manufacturing centre with a population of 16,000. Lurgan has a fine wide main street, and this and its main roads are equipped with 144 Siemens 250-watt mercury lanterns on Stanton spun concrete columns. In 1953 Lurgan began to carry out further improvements by equipping some of the traffic islands with Siemens Wilton Sieray 3 x 80-

Fig. 4. Main road lighting at Newry using Siemens fluorescent lanterns.

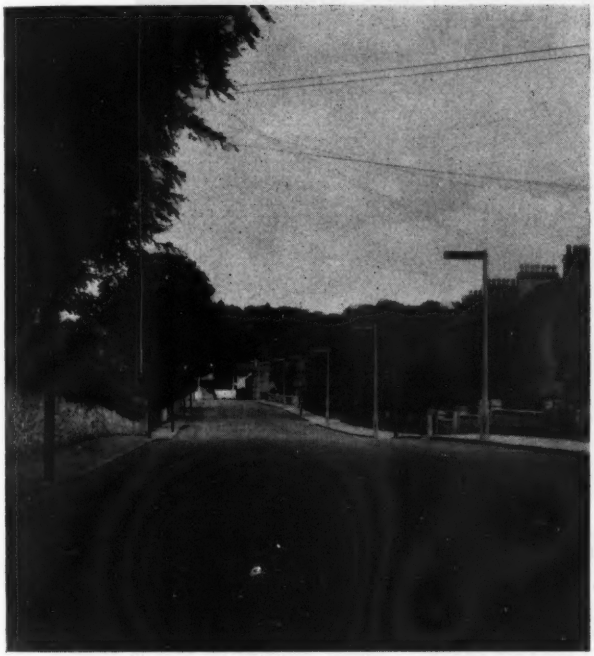


Fig. 5. Installation of Revo "Sol-etern" fluorescent lanterns at Newry.

Fig. 6. Siemens fluorescent lanterns at Warrenpoint

Fig. 7. Class "B" installation of Siemens 2 x 40-w. lanterns at Warrenpoint

watt double arm fluorescent units mounted on Concrete Utilities columns.

Lurgan is near Lough Neagh (the largest lake in the British Isles, 148 square miles in extent and 51 feet above low water sea level), on the other side of which is the town of Antrim. In 1952 this town decided to equip its main road with fluorescent lighting and awarded the contract to the G.E.C., Ltd. Mounted on Concrete Utilities 3DN columns, the 108 G.E.C. fluorescent lanterns are equipped with "warm white" lamps. In the main body of the scheme three lamps per lantern are used but on the outskirts the lanterns are fitted with two lamps only. This installation is the only class "A" fluorescent installation in Northern Ireland to utilise "Perspex" refractors for optical control. Generally speaking, the units are spaced at 120 ft. apart in staggered formation along fairly straight lengths of 30-ft.-wide concrete roads.

Heading still further north, one passes through the prosperous market town of Ballymena and arrives eventually at the seaside town of Ballycastle, where mercury lamps are widely used.

Westwards along the coast lies the town of Portrush, a leading holiday resort. The street lighting here is by tungsten lamps. It was understood that the salt-laden air and Atlantic gales had disastrous effects on any aluminium constructions in the town. It was decided during last winter to test out a fluorescent lantern on a concrete column; up to the time of writing no adverse effects had been reported. The coast road between Portrush and Portstewart is illuminated by 70 Siemens 250-watt mercury lanterns mounted on Stanton columns, and these units also receive the full force of the Atlantic winter gales. This road runs along the cliffs and parallel to the sea for two miles, presenting wonderful views but a problem to the erection engineers who had to excavate in rock for pole positions.

The road into the historic city of Londonderry skirts Lough Foyle, across which the hills of Inishowen in Co. Donegal, Eire, stand out. Londonderry (pop. 50,000), with its ancient and historic walls, is illuminated by 300/500-watt filament lighting, although steps are being taken to install 250-watt mercury vapour lighting using Ediswan lanterns and equipment in certain parts of the town.

Following the River Foyle we eventually come to the busy and prosperous market and border town of Strabane (pop. 6,000). Strabane's twisting, winding streets are illuminated by Siemens 250-watt mercury lanterns mounted on Stanton class "A" columns with a proportion of 80-watt MB/V units.

Relaxing from our inspection of lighting installations we settle down to the 50-mile run through typical Northern Ireland

Fig. 8. Installation of Siemens fluorescent units at Dungannon.

scenery to Dungannon. Away on our left hand are the famous Sperrin Mountains and our halfway house is Omagh, Co. Tyrone. To the south-west is Enniskillen, county town of County Fermanagh, built mainly on an island in the channel connecting Upper and Lower Lough Erne, and a tourist centre for what is called the Lake District of Northern Ireland. Enniskillen has a small proportion of mercury vapour lighting.

When we arrive at Dungannon (pop. 5,000), sometimes called the Heart of Ulster, we are once again back into fluorescent street lighting. This scheme was erected in March, 1953, and comprises 50 Siemens class "A" 3 x 80-watt lanterns on concrete columns. The class "B" lighting consists of 100-watt metal filament open refractor lanterns.

We are now on our way back to Belfast, and pass again through Portadown and Lurgan to Moira, until four miles from Lisburn we enter a stretch of road lighted by E.L.E.C. bowl refractor lanterns with 125-watt MB/V lamps mounted on the existing overhead line network by heavy duty galvanised brackets.

It would be unwise to leave Northern Ireland without visiting the Ards peninsula; knowledgeable motorists avoid the heavy trafficked road to Belfast and beyond, and cut across country from Lisburn via the by-roads. The Belfast-Ballynahinch road is an example of City Electricity Department and Electricity Board for Northern Ireland co-operation, the Electricity Board having continued the city 250-watt mercury vapour installation with Siemens 125-watt mercury vapour units on their overhead pole network through the rural district.

At Comber, we turn parallel to Strangford Lough until we enter the town of Newtownards (population 11,000). In late 1950 Newtownards decided to remove all their gas lighting save for one new housing estate installation and accepted Siemens tenders for 169 class "A" 3 x 80-watt fluorescent units and 350 80-watt mercury-vapour equipments. The main street of Newtownards is 70-80 ft. wide, and it was proposed to turn this into a dual carriageway road. At the same time this road used to be one of the sections of the famous Ulster Tourist Trophy Races and periodic spreading of granite chippings and tar had raised the height of the road in some places to 1 ft. above the proper level. When the lighting scheme was carried out centre double-arm fluorescent units were sunk an additional foot below the road surface to allow for scarifying this road, thus giving an actual mounting height of 24 ft. instead of 25 ft. Interspaced with the double arm units are single-arm poles and lanterns, giving the road a dual carriageway lighting system. At

the time of writing the road works are still incomplete with consequent criticism of the double-arm units in the centre of the road. Fighting against one of the severest winters imaginable, with snowfalls and repeated freezing temperatures which caused chaos to Post Office overhead lines and Electricity Board lines, the first part of this scheme was completed in time for the official switch-on ceremony on December 15, to give Newtownards the brightest Christmas ever. A large number of the side-road units were fixed to walls and overhead line poles by means of heavy duty galvanised brackets. The Electricity Board overhead line network could not be altered in certain positions without heavy expense; consequently some lighting units had to be placed single sided or to the back of the pavement to avoid fouling the overhead lines.

North of Newtownards is the seaside resort of Bangor, Co. Down (population 20,000), which is entered by a good wide concrete road illuminated by mercury lanterns mounted on single- and double-arm concrete columns. In 1951 Bangor installed seven G.E.C. 4 x 80-watt fluorescent lanterns on the parade on Concrete Utilities Parade columns and subsequently, in 1952, extended this installation to 75 lanterns spaced at 100/110 ft.

The activities of the Electricity Board for Northern Ireland during the last four years have included the installation of nearly 800 class "A" fluorescent units and 630 class "B" fluorescent units; nearly 500 class "A" mercury-vapour units, over 1,000 80/125-watt MB/V equipments, 3,000 wood pole and wall mounting heavy duty galvanised brackets, and over 1,500 concrete columns.

Sir Winston Churchill, when paying tribute to Ulster's part in Word War II, said, "But for the loyalty of Northern Ireland we should have been confronted with slavery and death, and the light, which now shines so strongly throughout the world, would have been quenched." Let us in our turn pay tribute to the designers, the shippers, the sailors, the clerks and typists, the engineers and labourers who so gladly contributed their skill and energy to bringing modern lighting to so many Northern Ireland towns and villages. During the last four years, in addition to the street-lighting work mentioned above, the Electricity Board for Northern Ireland has made over 34,000 new connections, including over 4,000 farms.

Street Lighting Progress in S. E. Scotland

(*Continued from page* 434)

efficient systems of lighting for the main Group A roads through their respective burghs. This same district includes some of the famous battlefields, for instance, Prestonpans, where "Bonnie Prince Charlie" gained his famous victory; Carberry, near Inveresk, where Mary, Queen of Scots, surrendered to the Scottish Confederate Lords; and Pinkie, where the Scots suffered one of their worst defeats by the English, led by the Earl of Somerset.

To the west and north of Edinburgh much development has been undertaken in the industrial area, in particular in the towns of Bathgate, Bo'ness, Clackmannan, Grangemouth (where new oil refinery plants are now in full production) and Kilsyth. On the main A.9 road from Edinburgh to Stirling schemes have been installed at Winchburgh, Lauriston and Polmont, and also in the ancient town of Linlithgow, where the majestic palace stands in its impressive setting overlooking the loch. At Stirling, the scene of famous exploits of William Wallace and Robert the Bruce, a short stretch of experimental fluorescent lighting has been erected and it is understood that this is to be developed further within the town centre with 140-watt sodium points on approach roads.

Over the Forth into Fife, an installation has recently been completed at the naval town of Rosyth, lying close to Dunfermline, the ancient residence of Kings of Scotland, and also at Inverkeithing on the north of the Queensferry passage and adjacent to that gigantic engineering achievement, the Forth Bridge, built in 1890. The coastal towns of Kirkcaldy, Buckhaven and Methil, Pittenweem and Anstruther have also undertaken modern schemes since the war, and a new installation is now under way at Leven. Farther inland Fife County Council have provided good lighting at Newburgh and Coaltown of Wemyss, and there are also excellent examples at Falkland, Lochgelly and at the northernmost extremity of the Board's area at Newport and Tayport, while at St. Andrews, famous for golf and as a university town, the Council are pursuing an active policy of changeover from gas to electricity.

A.P.L.E. Conference at Liverpool

Report on the proceedings of the recent annual conference of the Association of Public Lighting Engineers.

The Association of Public Lighting Engineers held their twenty-fourth annual conference at Liverpool from September 15 to 18, under the presidency of Mr. C. C. Smith, the Public Lighting Engineer of the City. They were not as fortunate as usual in the weather, but even the continuous rain of the first day failed to damp the enthusiasm of the large number of members and delegates who were present.

The Conference proper was preceded by the Annual General Meeting of the Association for the transaction of domestic business, such as the presentation of the treasurer's report and the election of officers and council. The retiring president, Mr. E. Howard, was in the chair, and he announced the following elections for the year 1953-54:—

President: Mr. C. C. Smith, A.M.I.E.E., F.I.E.S. (Public Lighting Engineer of Liverpool).

Vice-President: Mr. L. A. Doxey (Public Lighting Engineer of Leeds).

Members of Council: Mr. H. Pryce-Jones (Immediate Past President), Mr. H. Carpenter and Mr. N. Boydell.

The Council for 1953-54 is thus exactly the same as that for the past year.

After making these announcements, Mr. Howard formally invested the new president with the chain of office and Mr. Smith expressed his sense of the honour conferred on him and of the responsibility which accompanied it.

The A.G.M. was held in the new Philharmonic Hall, and in the interval between the conclusion of this meeting and the opening ceremony of the Conference, delegates were delightfully entertained with an organ recital. At 10.45 a.m. the Deputy Lord Mayor of Liverpool, Alderman A. Morrow, welcomed the Association to Liverpool and declared the Conference open. After expressing the regrets of the Lord Mayor, Alderman W. J. Tristram, that he was unable himself to perform the opening ceremony and to welcome the delegates owing to the fact that he had to attend an international municipal congress in Montreal at that time, Alderman Morrow said that he would like to congratulate the Association on their choice of a president, and then went on to mention some of the attractions of Liverpool. He said that he was pleased to see they had delegates from a number of countries overseas, including Belgium, France, Holland, Hong Kong and Ireland, and he wished them all success in their deliberations.

After this opening ceremony, the Deputy Lord Mayor, accompanied by the president, officers and council of the Association, drove to St. George's Hall to open the exhibition of street lighting equipment which had been assembled there and in the adjacent open spaces. An account of the exhibition is given at the end of this report on the conference proceedings.

Presidential Address

The first Conference Session was held at 2.30 p.m. on Tuesday, September 15, in the Picton Hall, adjacent to the Walker Art Gallery. The proceedings began with the presidential address by Mr. C. C. Smith, who took as his theme the benefits of co-operation in the practice of public lighting. Every machine, he said, whether it were mechanical, political, commercial, or even

human, was destroyed, not by work but by friction, and where there was true co-operation friction was entirely eliminated.

Of the highest importance, said Mr. Smith, was co-operation between neighbouring local authorities. The dovetailing of schemes and, in many instances, the use of common operation and maintenance arrangements could make the problems involved easier and their solution more economical, to the general benefit of all citizens in the area. Although such co-operation could naturally lead to greater uniformity in the types of lighting used, an even more important result would be greater uniformity in the standard of lighting. The speaker emphasised that there was far less danger in going from one kind of lighting to another than in going from a good to a bad lighting scheme. Mr. Smith said he felt that there could easily be too much uniformity and he referred in particular to street lighting columns which, he felt, were in great danger of becoming too stereotyped. "To my mind," he said, "the tiresome thing about modern lamp standards . . . is not so much that they look like sick serpents with carpet cleaners in their mouths, but that they ALL look like sick serpents with carpet cleaners in their mouths."

The president then turned to co-operation in financial matters, particularly where the parties concerned were the lighting authorities, the Ministry of Transport and the National Boards. The financial assistance granted through the Ministry of Transport was, he felt, inadequate, not only because it was available only for trunk roads, but also because it was accompanied by conditions which were in many cases too restrictive and dictatorial in character. Such conditions were, in fact, often applied where there was no grant from national funds, the Ministry using its powers under Defence Regulation 56A, and in many areas this action was deeply resented.

With regard to the National Boards, Mr. Smith pleaded for an early reconsideration of their general policy towards public lighting. He felt that charges for laying mains and for the supply of energy had increased much more than the cost of wages and materials. Public lighting, he said, had previously been regarded as a service of great importance to the community and had accordingly received a certain amount of preferential treatment. He felt that it should not be beyond the ingenuity of man to arrange that some form of indirect assistance could continue to be given.

Mr. Smith then spoke of the Association's Diploma scheme as now finalised and launched. Details, he said, would be published very shortly and the scheme would begin to operate from January 1, 1954. Finally he spoke of the excellent co-operation existing between lighting engineers and the manufacturers and he urged that technical co-operation was also needed between the civil engineer, who was responsible for the road surface, and the lighting engineer who had to make the best use he could of the surface presented to him.

A vote of thanks to the president was proposed by Mr. Doxey and seconded by Mr. Pryce-Jones who also congratulated Mr. Smith on his election to Fellowship of the Illuminating Engineering Society.

Efficiency in Street Lighting

The second half of the session was occupied by a paper on "The Utilisation Factor in Public Lighting," by Mr. Geoffrey Fitton of the Welsh Gas Board (Neath Undertaking). The utilisation to which he referred was of three kinds, viz. (i) that of the light produced by the sources, (ii) that of the capital available, and (iii) that of existing equipment. In the first section of the paper the author gave a brief outline of the meaning and use of iso-candle diagrams, showing how they could be used for studying the distribution of light in a street and particularly the effect of road width, mounting height and other factors. Taking as a concrete example a fitting with axial asymmetric distribution, mounted at 25 ft., he calculated that the percentage of the total light from the fitting which reached the carriageway was 21 per cent. for a road 18 ft. in width and 35 per cent. for a 35 ft. carriageway. This percentage Mr. Fitton termed the "utilisation factor" and he showed a diagram with two curves relating the utilisation factor to the road width for mounting heights of 15 ft. and 25 ft. respectively. The considerable gain at the lower mounting height, especially for road widths of 20 to 35 ft., was clearly demonstrated.

The author then turned to the utilisation of capital resources. He said that in not a few cases too close an adherence to the terms of the Code of Practice had led to the erection of systems which were not justified by the traffic needs. He drew attention to that section of the Report of the Departmental Committee where it was envisaged that existing installations might be improved in cases where the erection of a complete installation of Group "A" lighting was not possible on financial grounds. In spite of

this, he said, local authorities were able to get little or no financial help for such improvements. He gave details of some actual installations where full Group "A" lighting had been erected on roads where the traffic volume was, in his opinion, quite insufficient to justify it. He also mentioned a road with dual carriageway where lighting had been erected on the central reservation alone as a temporary measure. After this had been in use for some time it was found that vehicles using the road generally dispensed with their headlights and so the further work originally contemplated had not, in fact, been carried out.

In the third section of his paper Mr. Fitton dealt with the efficient utilisation of existing equipment and here he confined his remarks to that branch of public lighting with which he was most familiar, viz., lighting by gas. There were, he said, over 650,000 gas lighting units at present in use in our towns and it was absurd that these should not give the best results of which they were capable, yet in many cases this was, in fact, the state of affairs. He mentioned a number of the developments which had taken place in recent years, each having a contribution to make to the efficiency of a street lighting installation. Pressure governing, he said, had been practised widely for many years but there were still large groups of public lamps which were ungoverned and therefore tended to follow any variations in working pressure which might occur, either deliberately or accidentally. Then there was the modern stainless steel injector which, with pressure governing, could ensure not only the correct gas rate to the burner, but also the correct flow pattern of air-gas mixture within the burner for maintaining proper combustion conditions.

Turning to the subject of maintenance, Mr. Fitton said that long-run controllers with an operating cycle of 40 days were now available, and these made it possible to reduce the amount of attention required. The use of toughened glass, too, could reduce the casualties caused by malicious damage. Even the cleaning schedule might be found to be capable of revision in certain cases.

The discussion was opened with a written contribution from Mr. Norman Hudson, who, it will be remembered, contributed a paper on the modernisation of gas street lighting at last year's conference. He endorsed what the author had said about the disadvantages and possible wastefulness of too strict an observance of the recommendations in the 1937 Report and the Code of Practice. He observed that the author had taken a single type of fitting, designed for a mounting height of 25 ft., and had based his calculations on this. In practice, said Mr. Hudson, a different distribution would be used at a lower mounting height. For maximum efficiency the mounting height should be related to the street width and the light distribution should be suited to both. In conclusion, Mr. Hudson referred to the aesthetic side of the matter, and said that, here again, to follow the Code too rigidly might lead to an incongruous and aesthetically displeasing installation.

Mr. A. T. Harris, of the Road Research Laboratory, emphasised that what mattered in street lighting was not so much the light incident on the road as the light reflected from it. This might well be affected by the mounting height, so that the author's utilisation factor did not tell the whole story.

Mr. M. V. Osmond, of the Council for the Preservation of Rural England, said that there was widespread concern about the appearance of street lighting equipment, especially in villages and in the countryside generally. In particular the concrete column had aroused a great deal of adverse criticism, and the complacency shown in some quarters over this matter was quite unjustified.

Mr. E. H. Jesty referred to the increase of glare caused by lower mounting, Mr. E. K. Knight to the great value of the light which fell on the footpaths and on the sides of buildings, while Mr. F. C. Smith agreed with the author that the more light that could be put on the roadway the better, so long as it was put there in the proper way.

After a brief reply by the author, in which he referred to the need for greater collaboration between neighbouring lighting authorities, the session closed with a vote of thanks to Mr. Fitton, which was carried by acclamation.

The Quality of Street Lighting

Readers of *Light and Lighting* will remember the article on "The Concept of Luminance in Street Lighting," by Mr. J. B. de Boer, published in the issue for November of last year. Mr. de Boer has carried out a great deal of research on lighting problems at the Philips Light-Technical Laboratory at Eindhoven, Holland, and it was therefore with great interest that the delegates listened to his paper, "Criteria of the Quality of Street Lighting," given at the second Conference Session on Wednesday morning, September 16.

Mr. de Boer said that the principal criteria by which the quality of a street

lighting installation could be judged were (i) the luminance of the street surface, (ii) the contrast between objects on the roadway and the background against which they were seen, and (iii) the extent of the glare experienced by a driver. Both in this country and in America, he said, a considerably greater degree of glare was commonly accepted than would be tolerated on the Continent, where the cut-off type of lighting was generally favoured. He referred to Dunbar's experiments on disability and discomfort glare, saying that he had himself confirmed the finding that the contrast sensitivity of a driver was almost unaffected by glare from the street lamps so long as this did not exceed the threshold at which discomfort began to be experienced.

With regard to the luminance of the road surface, Mr. de Boer said that a careful study of all the available information, particularly the results obtained by Bouma and by Dunbar, had led him to the conclusion that the average luminance should not be less than 0.15 ft.-lambert. The amount of diversity to be permitted depended on the luminance distribution. Dark bands across the roadway had little effect on visibility, whereas longitudinal streaks were potential sources of danger, since it was quite easy for an object such as a pedestrian to disappear in a dark patch of this kind. While it was possible to lay down acceptable limits on luminance diversity and to satisfy these when the road was dry, it was extremely difficult to avoid the creation of dangerous conditions when the road was wet.

For the minimum acceptable value of contrast, defined as the ratio of road luminance to object luminance, the author's experimental figure of 1.7 was in reasonable agreement with that found by Dunbar, viz., 1.5, but having regard to the fact that some of the objects which a driver had to detect were smaller than those used in the experiments, Mr. de Boer thought it safer to adopt a figure of 2.0, and he used this for the contrast criterion in later sections of his paper.

On the subject of glare the author referred to Hopkinson's work and said that while, speaking generally, he had confirmed this, he was of the opinion that the constant which Hopkinson had found for the limit of satisfactory glare conditions gave a rather higher degree of glare than would be acceptable for street lighting on the Continent. He had found, too, that the degree of glare depended on the colour of the light. The luminance of a sodium fitting, for instance, could be twice that of a fitting with a tungsten lamp giving the same degree of glare.

Mr. de Boer then gave the results of a detailed comparison of three installations differing only in the light distribution from the fittings. One was a high-angle beam, one a low-angle beam, and the third a cut-off installation, the light distribution in each case being that given in the British Code of Practice as typical of the system. In his paper the author gave figures for a street paved with cobble-stones, but at the meeting he showed on the screen and quoted figures calculated for an asphalt surface. For each of the three distributions he took both dry and wet road conditions. The luminance figures were seen to be much the same for the first two systems but, as would be expected, considerably lower for the cut-off system. Contrast was generally similar for all three systems under dry conditions, but lower and more variable for the cut-off installation under wet conditions. The cut-off system naturally showed a very much lower glare figure, both absolutely and in comparison with the road surface luminance. In considering Mr. de Boer's figures it was necessary to remember that the mounting height (30 ft.) and the spacing/height ratio (4) was the same for all three systems.

In the final section of his paper the author reproduced four very interesting diagrams, each showing, for a selected position of the observer, the distribution of luminance and of contrast over the road surface. The four diagrams referred respectively to a high-angle beam and a cut-off installation, each under dry and under wet conditions.

The discussion on this paper was opened by Mr. J. G. Holmes, who pointed out that the quality of a street lighting installation had to be judged by a number of things, among them the general appearance both by day and by night. He was pleased to see that the author had taken as one of his criteria the luminance of the road surface, i.e., the amount of light coming from it rather than the amount of light incident. A striking example of the way in which this concept had been applied was the unidirectional lighting of a road with a dual carriageway. Mr. Holmes referred to the author's comparison of the three systems of lighting and pointed out that the road surface luminance was rather more uniform with the medium-angle beam than with either of the other systems. He thought this might be due to the fact that the cut-off installation was side-mounted. In this

country the cut-off system was more usually centrally suspended and had a shorter spacing than the others.

Mr. A. W. Christie, of the Road Research Laboratory, said that the simple answer to the glare problem was the use of a cut-off distribution. The high-angle beam system had been developed at a time when road surfaces were generally very smooth. Nowadays they tended to a rougher texture and the system consequently lost some of its advantages. He added that the appraisal of street lighting could be related to road-user behaviour, and this line of attack was being followed at the Road Research Laboratory.

Mr. W. Robinson said that it had been stated that fluorescent lighting produced more disability glare on account of the size of the source, and he asked Mr. de Boer for an opinion on the matter, while Mr. H. R. Ruff asked whether the lighting of trunk roads was fav ured on the Continent.

In his reply Mr. de Boer said that central suspension was not generally adopted on the Continent. Not only was it often ugly, but it had been found to encourage drivers to use the centre of the carriageway. In reply to Mr. Robinson, he said that the principal size factor in glare was the total solid angle subtended at the eye, not the maximum dimension. He did, however, suggest that the longer source, by softening the shadows cast by objects, might give a slightly lower visibility.

A vote of thanks to the author, proposed by Mr. J. M. Ward of Glasgow, was carried by acclamation.

Annual Luncheon

The annual luncheon of the Association was this year held on the Wednesday of the Conference week. It was the first luncheon to be held at the newly opened Lewis's Restaurant in Ranelagh Street.

The joint toast of "The City and Port of Liverpool and the Guests" was proposed by Mr. H. Pryce-Jones, a Past President, who referred to the years he had spent in Liverpool, first as a student at the University and later in the department of the City Electrical Engineer. He welcomed the guests and, in particular, Sir Harold Hartley, whom they were delighted to have with them.

The Deputy Lord Mayor, in his reply, paid tribute to the activities of the public lighting engineer and referred appreciatively to the work of the president in brightening the streets of Liverpool He hoped that everyone present would see much of interest and he added that, as an additional attraction, they had arranged for two whales to be stranded on the Mersey shore for the especial benefit of those going on the afternoon cruise in the *Royal Iris*.

Sir Harold Hartley, K.C.V.O., C.B.E., F.R.S., proposed the toast of the Association of Public Lighting Engineers and spoke of the great advances that had been made in street lighting, attributing this to scientific research stimulated by competition between the gas and electrical industries. He believed in healthy competition and detested what he called "the stagnation of uniformity," but he added that no one who used the North Circular Road in London could think that street lighting was ever likely to suffer from too much uniformity. He concluded by referring to the beautiful effects achieved by the public lighting engineer during the Coronation period.

In his reply to the toast, the president joined with Sir Harold Hartley in appreciation of the results of scientific research. Returning to the theme of the address, he said that the greatest progress in street lighting could only be achieved by close co-operation between the scientist, the engineer, the manufacturer and everyone else concerned with making the results of technical progress available for the benefit of the man in the street

Lantern Design

On Thursday morning the delegates assembled in the Picton Hall to hear a paper by Mr. M. H. Mounsdon, of the General Electric Company, Ltd., on "The Design and Manufacture of Street Lighting Lanterns," but in fact they found themselves attending a documentary film show. Mr. Mounsdon presented his paper by showing three colour films, supplying in each case a commentary based on the corresponding part of what he had written.

The first film dealt with optical design, and here Mr. Mounsdon introduced his audience to a new term, the "optikon," which he defined as the "arrangement of optical devices, usually reflectors or refractors, used to re-direct the light from a lamp into a predetermined distribution." The type of optikon adopted for a particular lantern was often influenced by matters quite other than the desired light distribution. Some sources, for instance, could only be used in a particular position, while in other cases the heat emitted was an important factor. Mr. Mounsdon said that, for a given degree of accuracy of form, refractors gave a closer

control of the light distribution. On the other hand, reflectors could be produced in an ordinary workshop without the need for much special equipment. Glass refractors were more fragile and much heavier than those constructed of "Perspex," but the latter could not be used where the temperature was likely to rise above 70 deg. C. Reflectors could be made of silvered glass, anodised aluminium, or stainless steel, while stove or vitreous enamel could also be used where a diffuse reflector was wanted.

The second film dealt with the design of the body of a lantern and its components. Bodies, said Mr. Mounsdon, fell into two groups, viz., those that were designed for small or vertical sources and were symmetrical about a vertical axis, and those that were designed for use with horizontal sources. These could either be built up or constructed with a one-piece top casting to which everything else was fixed. Easy maintenance was a most important matter, and in this connection careful attention was paid by the designer to such apparently trivial matters as hinges and fastenings. For the latter, although the old wing nut and swing bolt were satisfactory so long as they were not corroded or clogged with paint, the tendency now was to use fastenings working with a toggle action and exercising pressure against some form of gasket or other resilient element.

The third film showed various stages in the manufacture of the lantern after it had left the designer's hands. The design of any lantern that was to be produced in large numbers had to be carefully considered from the point of view of the factory and close collaboration between the designer and the works manager from a very early stage was essential. Mr. Mounsdon showed the processes involved in making refractor plates and other components from plastics, and he concluded with an account of some of the tests to which a completed lantern was subjected.

Mr. W. F. Griffiths, in opening the discussion, stressed the fact that, although the cost of the lanterns was only a small part of the total expenditure on a street lighting installation, their performance was vital to its success, so that cost was a secondary matter compared with this. He thought that the importance of good appearance of the lanterns had not been sufficiently brought out by the author. To his mind the "user" was not only the public lighting engineer but the citizen who used the streets and looked at the lanterns every day.

Mr. F. H. Pulvermacher pleaded for more standardisation in the form of the iso-candle diagrams and other relevant data provided by manufacturers. He referred to the Hollywood habit of presenting "Oscars" for outstanding performances and suggested that the A.P.L.E. might well consider the idea of making an annual award to manufacturers for "the best lantern of the year."

Mr. M. V. Osmond took up a remark by Mr. Griffiths that a lantern should not only be pleasing in itself but should harmonise with the column on which it was mounted. He asked if there was any collaboration between the fittings designer and those who decided on the type of post to be used for mounting the completed lantern.

Mr. W. G. Parkinson drew attention to the importance of limiting the temperature to which the wiring inside the lantern was subjected, while Ald. Doggett asked whether "Perspex" showed any serious deterioration in service.

Mr. Mounsdon, in his reply, said that the fittings designer took care that the lampholder was not over-heated and he then assumed that this took care of the wiring as well. "Perspex," he said, had now been in use for over seven years and it could be said with confidence that its performance would be satisfactory over at least 10 to 15 years. He agreed with those speakers who urged that careful attention should be paid to the appearance of lanterns.

A vote of thanks proposed by Mr. H. F. Cork was accorded an enthusiastic reception by the delegates present.

Public Lighting in Belgium

On Thursday afternoon, at the fourth Conference Session, M. André Boereboom, of the Belgian Ministry of Works, gave a most interesting paper in which he described the great advances made since the war towards raising the standard of public lighting in Belgium. This, he said, had previously been very low, one reason, no doubt, being the high cost of power, viz. 3½d. per unit, on the average. The development of the mercury vapour lamp and then the fluorescent lamp had, however, made rapid advances possible and there was now keen competition among the municipalities to improve the lighting in their respective areas.

Cut-off fittings, said the author, were much more popular than in this country and central suspension was common, especially in the narrow streets of the older towns. Fluorescent lamps were generally tilted at some 10 to 15 deg. with the horizontal. The Ministry could make grants of up to 30 per

cent. of the initial cost of an installation but in order to qualify for this grant, conformity with the Belgium Code of Practice, issued in 1952 under the auspices of the Belgium National Illumination Committee and the Belgian Standards Institute, was required.

M. Boereboom said that great attention was being paid in Belgium to the subject of street accidents, and a society known as the Via Secura had recently been formed with objects similar to those of the Royal Society for the Prevention of Accidents.

In the part of his paper dealing with floodlighting, M. Boereboom gave some striking figures showing the rapid increase in the number of tourists visiting Bruges since the inauguration of the floodlighting. It will be remembered that M. Boereboom contributed to *Light and Lighting* for September, 1952, a richly illustrated article on floodlighting in Belgium, and some of the photographs in that article were included in the many which he showed during the presentation of his paper at Liverpool Floodlighting, said M. Boereboom, was also used to illuminate the bridges crossing the Brussels-Ostend autobahn. This relieved the monotony of driving along a road of this kind at night, when there were no landmarks and nothing to indicate one's position.

Fluorescent lighting, said the author, had extended very rapidly, and in this connection he mentioned the town of Charleroi, which had the distinction of being the first town in Europe to be lighted entirely by fluorescent lamps. (An excellent account of this and other fluorescent installations in Belgium was given in an article by M. Boereboom published in *Light and Lighting* for August, 1950.) The author said that by far the most popular fluorescent lamp size was the 40-watt rating.

Discharge lighting, as distinct from fluorescent, was mainly of two kinds, viz., sodium and high-pressure mercury in fluorescent bulbs. For lighting trunk roads the author advocated sodium on account of its efficiency. Cut-off fittings were used with spacings of 115 ft. for the 85-watt lamp, and 150 ft. for the 140-watt lamp, the mounting height being 33 ft. For built-up areas the mercury lamp was widely used in both the 80-watt and the 125-watt sizes, while recently a 250-watt lamp of this kind, giving 9,500 lumens, had been introduced. The fluorescent lamp was, however, competing very successfully with the mercury lamp, and was rapidly growing in favour.

In the final section of the paper M. Boereboom gave an interesting analysis of the costs of the various systems, taking the price of power as 2 francs (3.4 pence) per unit. On the figures he used as a basis, a tungsten lamp system was shown to be the most expensive and sodium the cheapest, with mercury and fluorescent intermediate in that order.

As Mr. J. M. Waldram was prevented by illness from being present, the discussion was opened by Mr. E. C. Lennox, who said that the h.p. mercury lamp in a fluorescent bulb was a newcomer in this country, and he asked the author some questions with regard to its performance. After a reference to the huge cost of street accidents and a condemnation of the slowness with which fluorescent street lighting was being developed in this country, Mr. Lennox advocated an exhibition, like that held at Namur some years ago and which lasted several weeks, where representatives of local authorities could see for themselves the various forms of modern street lighting available.

Mr. E. H. Jesty gave some figures showing the rapid increase in the use of power for public lighting in Belgium, compared with the much slower increase in this country, while Mr. H. Long advocated the use of cut-off lighting.

M. L. Gaymard, who is well known to members of the Illuminating Engineering Society in this country as the electrical engineer responsible for much of the street lighting of Paris, referred to the tilting of fluorescent lamps, and said that this had considerable advantages, especially in very wide thoroughfares where lamps were mounted at the sides of the carriageway.

In his reply, M. Boereboom said that the 125-watt mercury fluorescent lamp gave about 5,000 lumens and had a life of 3,000 hours. It was used in a vertical or near-vertical position. The colour had been found generally acceptable for street lighting purposes. At present lamps of this type outnumbered the ordinary fluorescent lamps in the ratio of 3 : 1, but the fluorescent was extending much more rapidly than the mercury lamp and he felt that it would not be long before this disparity was reduced to 2 : 1.

A vote of thanks was proposed by Mr. Lennox and was carried by acclamation.

Electric Power Cables

It has been the custom of the A.P.L.E. to have, at the last session of each conference, a paper on one or other of the basic materials on which public lighting depends,

and this year Mr. W. H. Lythgoe, of the Cable Makers' Association, gave what was, in effect, a lantern lecture on the manufacture of electric power cables of the kinds used in public lighting. He began his talk with a description of the way in which the raw materials of a cable were obtained. First, he dealt with the copper which came from the rolling mills in the form of coils of ½-in. rod. After thorough cleaning, this was drawn down by degrees to the size required, first in steel dies and then in dies made of industrial diamonds. After drawing, the wire was annealed in an inert gas and in certain cases it was given a thin coating of tin by passing it through a bath of the molten metal.

The chief raw material, other than copper, was rubber, and Mr. Lythgoe took his audience to a rubber plantation and showed them how the raw rubber was obtained from the trees, then masticated as dough and mixed with other ingredients to make the tough insulation used in cable manufacture. The rubber insulation, he said, could be applied to the stranded wire in several ways, including coating by an extrusion process. This process could also be used with thermo-plastic and thermo-setting materials, such as polyvinylchloride (p.v.c.) and polythene, which were now being widely used for cable insulation.

The next process to be described was the braiding with cotton or some similar material, and the type of machine used for this work was shown. Mr. Lythgoe then spoke about paper-insulated cables, and mentioned particularly the essential process of drying in a vacuum to remove unwanted air and the large amount of moisture present in the paper. During the discussion he mentioned that about 1½ gallons of water might be extracted from 500 yards of cable. The drying was followed by impregnation with materials which improved the insulating properties of the paper.

The last process to be described was that of sheathing a cable with lead or lead alloy, so that access of moisture to the dielectric was prevented by providing an impervious metallic envelope. A lead-covered cable was protected against mechanical damage or corrosion by applying a suitable coating in conjunction with special waterproof compounds. The materials generally used were impregnated paper, cotton, jute or hessian.

At the end of his lecture Mr. Lythgoe referred to the stringent tests applied to a finished cable to ensure its compliance with the appropriate British Standard Specification, and he showed some of the test equipment required for this purpose.

There was a short discussion after the lecture opened by Mr. A. E. Morgan, of the London Electricity Board, who said that in his area, where there were 2,000 miles of underground cables, the average number of faults was four and a half per 100 miles per year, and only a fraction of these were due to faults in the cables themselves, the others were at junctions or were due to some accident. He said that a lot of trouble was caused by condensation inside street lighting columns, and he asked whether p.v.c. insulation was superior to rubber under such conditions.

Mr. Pryce-Jones asked whether, in the process of lead sheathing by extrusion, there was any danger of charring paper insulation, while Mr. F. C. Smith inquired if it was common practice to make a soil analysis before laying a cable; in the gas industry it had been found that the pH value of the soil gave an indication of the rate of corrosion to be expected.

In his reply Mr. Lythgoe dealt with the subject of corrosion and said that different manufacturers adopted different methods for combating this trouble. He urged that the user should always inform the cable manufacturer of the conditions under which he intended to use the cable. There was no danger of charring when sheathing a cable with lead by extrusion, but there might sometimes be a risk of this when sheathing with aluminium.

At the conclusion of the discussion Mr. Lythgoe added some remarks about mineral insulated cables. Such cables were made by filling the interspace between a copper core and a copper tube with pellets of magnesium oxide. The whole could then be drawn down to the required size and the resulting cable could be subjected to severe strain without affecting the insulation between core and sheath.

Conclusion

During the period of the Conference there were, as usual, a number of social events.

On Friday, after the conclusion of the final conference session, there was a general meeting of the Association at the Picton Hall. At this the President expressed thanks to all those who had contributed to the success of the Conference, and he announced that in 1954 the Association would meet in Eastbourne.

Exhibition of Street Lighting Apparatus

Held in Liverpool during the A.P.L.E. Conference.

Lamps

One of the features of the A.P.L.E. exhibition at Liverpool was the new colour-corrected mercury fluorescent lamp (MBF/V), which was shown by the *B.T.H. Co., Ltd.*, the *G.E.C., Ltd.*, and *Philips Electrical Co., Ltd.* The new lamps are available in 80-watt and 125-watt ratings. These lamps make use of a new phosphor which provides a greater red ratio, thereby improving the colour-rendering properties of the lamps. The 80-watt lamp has a three-pin bayonet cap and the 125-watt lamp is available with either a G.E.S. or three-pin cap.

The new phosphor, on account of its improved temperature stability, enables the use of a smaller outer bulb than that of the previous MBF/V lamps; the bulbs of the new lamps are the same size as those of the standard MB/V lamps of the same wattages.

The B.T.H. Co. also showed improvements in their mercury and sodium lamps.

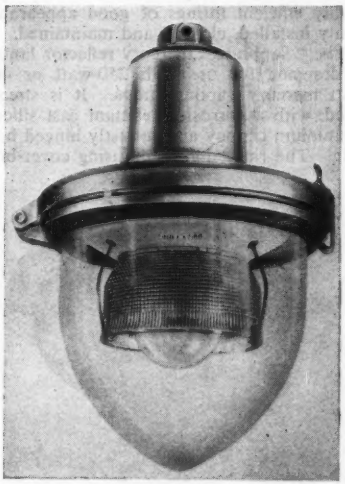
Lanterns

The *G.E.C., Ltd.*, showed several new lanterns and improved designs of many of their existing lanterns. The exhibit covered fluorescent lanterns, side-street lanterns, main-road lanterns and lamp-control gear.

A new lantern for main road lighting houses a 300-watt or 500-watt tungsten filament lamp or a 250-watt or 400-watt mercury lamp. The lantern body, made in cast-iron, is of extremely simple and clean design and, although inexpensive, possesses many new and outstanding features. It is suitable for top- or side-entry mountings. Two forms of optical control are available. In the tungsten-lamp form an inner single-piece prismatic glass dome refractor is used. The refractor and lamp are enclosed by a clear or rippled glass outer globe. Alternatively, an outer single-piece prismatic glass bowl refractor only is used with the mercury lamp. Easy access to the interior, for cleaning and lamp renewal, is provided by a quick-release stainless-steel toggle catch and hinged globe supporting ring. Two rubber gaskets make the lantern completely weatherproof when closed.

Changes have been made in the mechanics of the Dioptrion lantern. The lower dish is now supported in a die-casting and carried from two die-cast arms, and the necessary tension to the toggle catches is provided by helical springs. The enclosed sodium lantern is now fitted with a hinged vitreous-enamelled over-reflector, and the "Perspex" bowl is carried in a fabricated aluminium frame. A newcomer to the range is a Wembley lantern in cast-iron, cheaper than the aluminium design and of durable construction. An open Wembley lantern, die-cast in aluminium, is shown for the first time.

The range of G.E.C. side-street lanterns has been redesigned to increase simplicity in installation and maintenance: lamps can be focused simply and glassware removed



G.E.C. tungsten main road lantern.

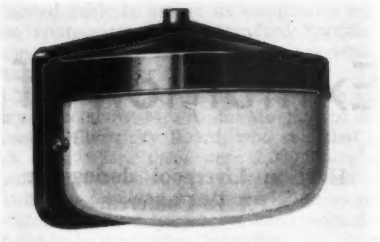
without use of tools; reflectors are hinged to the main casting and lampholders carried on a die-casting attached to the reflector; enclosing glassware is carried on a die-cast ring, and held in position, when the lantern is open, with spring clips.

A full range of fluorescent lanterns, horizontal and vertical, for lighting main and side streets, squares and gardens was also on view. The majority house two, three or four 40-watt or 80-watt hot cathode tubes. Of special interest was a new cold cathode lantern, believed to be the first of its kind, housing five 67.5-watt hairpin-shaped tubes.

A number of recently introduced lanterns were amongst those shown by the *B.T.H. Co., Ltd.* The "Mazda" fluorescent 5-ft. 3-lamp lantern incorporates a corrosion-resistant aluminium canopy and smooth one-piece "Perspex" cover bowl. An internal cantilever mounting obviates the need for tie-rods, struts or braces. The unit is easily cleaned, and a rubber gasket between the canopy and cover ensures that the lantern is fully weathertight and insect proof. B.C. fixed lampholders are used and the auxiliary gear is readily accessible. The "Mazda" horizontal sodium open lanterns are designed for use with 85-watt or 150-watt sodium lamps. They are essentially "Perspex" units with smooth, streamlined exteriors and sealed refractor side panels. A minimum of metal is used in the design. There is provision for either side- or top-entry mounting, and a flexible rubber lampholder protects the lamp and wiring. They are very light, highly efficient fittings of good appearance, easily installed, cleaned and maintained.

The "Sapphire" mercury reflector lantern is designed for use with 250-watt or 400-watt mercury vapour lamps. It is streamlined, with a corrosion-resistant cast silicon-aluminium canopy and robustly hinged bowl ring. The rippled-glass diffusing cover-bowl

B.T.H. "Sapphire" mercury lantern.



Revo "Critchley" tungsten lantern.

reduces glare to a minimum. The ripples also make the bowl self cleaning in rain. The whole unit is totally-enclosed, corrosion-resistant and completely weatherproof.

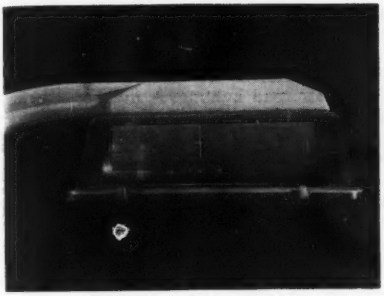
Of special interest on the *Holophane, Ltd.*, stand were two post-top units designed for Class "B" roads, a sodium cylindrical refractor lantern for Class "A" roads, a horizontal mercury discharge lantern and a single-piece bowl lantern for use with tungsten lamps.

The two post-top lanterns both give a two-way, non-axial light distribution and are designed for use with tungsten filament G.L.S. and sodium So/H discharge lamps respectively. The filament post-top unit can also be employed for use with mercury discharge lamps.

The sodium cylindrical refractor lantern is also of special interest for this embodies an adjusting device which enables the correct angle of incidence of the main beams to the road surface to be maintained on gradients by rotation of the refractor cylinder. Maintenance of uniformity of road brightness is accomplished, while glare conditions, often encountered on gradients with normal type lanterns, are avoided. The adjustment of the main beams can be related to any degree of road gradient up to 1-in-5.

Holophane also showed a new "cylindrical" lantern for use with two of the new 125-watt MBF fluorescent lamps. The lantern gives a peak beam instensity of 1,850 cd. and the distribution from it compares favourably with that from the larger lanterns using three 5-ft. fluorescent tubes.

The *Revo Electric Co., Ltd.*, showed a selection from their well-known range of fittings for use with tungsten, mercury, sodium and fluorescent lamps. It included the "Critchley" lantern for use with 60-watt or 75-watt tungsten lamps and especially designed for wall mounting in Class "B" roads. Delegates to the conference were



Crompton "Concept 2."

able to see an installation of these lanterns in Liverpool.

The enclosed version of the new *Crompton Parkinson* Concept 2 for main-road sodium lighting was shown for the first time. Three claims are made for the new equipment, improved appearance, reduced maintenance and lower costs.

The basis of the development is the integration of column and lantern into one composite design by co-operation between Crompton Parkinson Limited and of the two concrete column makers, Concrete Utilities Ltd. and the Stanton Ironworks, Co., Ltd. In both cases arrangements have been made for the manufacture of special brackets for use with the makers' standard shafts, the brackets terminating in a concrete head taking the place of the metal casting of the orthodox lantern. From the head, for the accommodation of the lamp and for light control, is suspended a translucent envelope formed by an inverted "Perspex" bowl closed on its underside by a hinged "Perspex" dish. Light control is provided by means of prismatic "Perspex" plates hermetically sealed to the inside of the bowl.

There is almost complete absence of metalwork, the little used being entirely non-ferrous. This, coupled with the fact that the main materials used are concrete and acrylic plastic, means that the maintenance problem is considerably reduced with a consequent saving in maintenance costs.

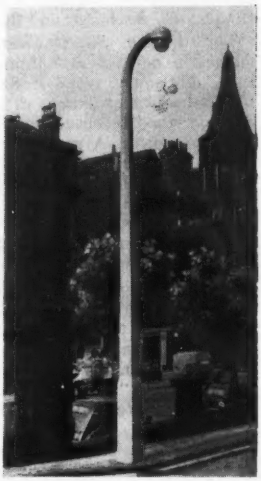
The latest versions of the Concept 1 for side-street lighting were also on show; they included the swan-neck and plain arc types, the latter being shown for the first time.

The *Engineering and Lighting Equipment Co., Ltd.*, showed a wide range of fittings for tungsten, sodium and mercury lamps. Several improvements have been made to existing lanterns in an effort to reduce maintenance costs; these improvements include the cadmium plating of all small components and the enclosing of the supporting springs for refractors so as to make a cleaner interior to the fittings and to provide a safeguard against corrosion. Various types of fittings of the open and closed types using "Perspex" refractors were displayed.

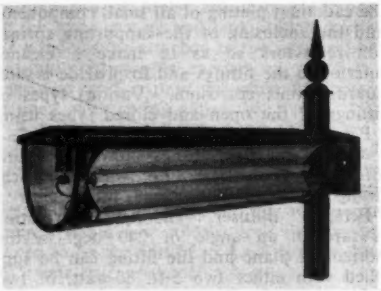
One of the new fittings shown by *Thorn Electrical Industries, Ltd.*, was a vertical fitting for two fluorescent tubes with a "Perspex" diffuser. The light distribution is through an angle of 240 deg. in the horizontal plane and the fitting can be supplied with either two 5-ft. 80-watt. or two 4-ft. 40-watt. tubes, the average output through life with white lamps being 8,000 lumens with the 5-ft. lamps or 4,160 lumens with the 4-ft. lamps. A two-inch spigot mounting for concrete or iron columns is provided and the control gear is housed in the base of the column.

Siemens Electric Lamps and Supplies, Ltd., showed a representative selection of equipment based upon the requirements of urban and inter-urban trunk roads.

The "City" lantern primarily designed for vertical wall mounting in built-up areas, was one of the main features. Utilising three 80-watt fluorescent tubes simulating daylight conditions, it is completely self-contained with special features providing ease of maintenance. The "City" lantern can also be fixed to concrete or steel columns, either singly or in various combinations, and has additional applications in the lighting of promenades and island sites where controlled illumination of immediate surroundings is



Crompton "Concept 1" plain arc type.



Siemens "Capital" lantern.

required in addition to a high road brightness.

Bearing in mind the complex nature of many cities and towns. Siemens also displayed their "Capital" lantern suitable for mounting on existing trolley-bus poles. The vibration transmitted to the overhead-line poles by passing buses, is absorbed by the special "centre of gravity mounting" feature, thereby eliminating damage to the optical section or the control gear. The lantern is suitable for use with two or three 5-ft. fluorescent tubes, and where a reduction of illumination for tapering-off into rural areas is required, 4-ft. tubes may be employed. This lantern can also be mounted on normal poles.

Other lanterns for lighting trunk roads, new towns, rural estates, civic centres, etc., were also shown together with a wide range of tungsten, discharge and fluorescent lamps.

The *Edison Swan Electric Co., Ltd.*, showed a new street lighting lantern using as its light source two 2-ft. fluorescent lamps. The optical arrangement of this lantern has been designed to ensure precise and efficient lighting control. A particular feature of the lantern is that the control gear and lamps are mounted directly on to the reflector which, in turn, is secured to the lantern housing. Thus if it should be necessary to reach the control gear the reflector and gear can be removed as a single unit, without disturbing the lantern, by disconnecting the supply leads and loosening four screws.

The body of the lantern is cast in corrosion-resisting silicon aluminium alloy, all screws entering the body being of stainless steel. Machine-cut "Perspex" refractor plates are sealed to a "Perspex" bowl which is hinged to the body of the lantern and secured by a stainless steel support and quick-release toggles; insect proof and water repellent felt ensures a tight seal between the body and the bowl.

A further new Ediswan lantern on show was the BT.22, a top-entry lantern suitable for minor road lighting. A number of other Ediswan lanterns suitable for various types of installation on A and B roads were also shown.

The *Wardle Engineering Co., Ltd.*, showed a wide selection of their well-known range of sodium street lighting fittings including the "Liverpool" lantern for 85/140-watt sodium cut-off lighting and their "Atholl" and "Stuart" totally enclosed lanterns for large and small sodium lamps. Lanterns for mercury and tungsten lamps were also shown.

Two new additions to their "Fulmar" range of sodium lanterns were shown by *Falk, Stadelmann and Co., Ltd.* These were of the enclosed type.

Columns

Stewarts and Lloyds, Ltd., exhibited a selection of their steel columns including eight for Group "A" roads (25 ft. mounting height) and four for Group "B" roads (mounting height 13 ft. and 15 ft.). The columns combine the qualities of strength and practical design with good appearance and simplicity. The columns exhibited were stripped of any ornamentation which can be added if required.

Five Group "A" and three Group "B" spun concrete columns were shown by the *Stanton Ironworks Co., Ltd.*, all of which had been approved either by the Royal Fine Arts Commission or by the Council of Industrial Design. These columns are available in either prestressed concrete or with normal reinforcement. A display on the stand illustrated tests which had been carried out to show that prestressed columns with-

A new Franco bollard.

stand impact at least as well as normal columns.

A selection of "Adastra" (*Poles, Ltd.*) columns was displayed. These columns are constructed from tapering steel tubular sections, the sections nesting inside one another for transport so that the length is usually only about 6 ft. 7 in. The sections are heavily galvanised to ensure resistance to corrosion. An "Adastra" floodlight tower was also on show; this was one of the series capable of carrying three 1,500-watt heavy floodlights at heights of up to 60 ft.

Other exhibitors of columns included *Concrete Utilities, Ltd.*, and *Costain Concrete, Ltd.*

Control Equipment

Venner, Ltd., showed a selection of their wide range of time switches including one for use with fluorescent lanterns to switch off a proportion of the tubes at midnight or any other set time. They also demonstrated the Venner Zebra Flasher, of which several thousands have already been supplied.

Other exhibitors of control equipment included the following: *Automatic Telephone and Electric Co., Ltd.*—"Rythmatic" ripple control system; *Automatic Light Controlling Co., Ltd.*—gas controllers and electric time switches; the *Horstmann Gear Co., Ltd.*—electric time switches and Zebra flashing units; and *Sangamo Weston, Ltd.*—electric time switches and instruments. *Bright, Son and Co. (Clerkenwell), Ltd.*, demonstrated their repair service.

Bollards, Tower Waggons, etc.

Franco Traffic Signs, Ltd., showed their flashing beacon equipment, a new bollard and a new external sign-lighting fitting. A feature of the bollard is its streamlined appearance—there are no protrusions and tamperproof reflex lenses are incorporated as an integral part of the bollard. The new external lighting fitting also has a pleasing appearance.

Traffic signs and beacons were also shown by *Gowshall, Ltd.*

Gas street lighting lanterns were shown by *Wm. Sugg and Co., Ltd.*

Tower waggons and ladders were exhibited by *Ford Motor Co., Ltd., John Gibson and Son, Ltd., John Kerr and Co. (Manchester), Ltd., Shaftesbury Ladders, Ltd.*, and *Vauxhall Motors Ltd.*

Plastics were shown by *Imperial Chemical Industries, Ltd.* Cable manufacturers included *Mersey Cable Works, Ltd.*, and *W. T. Henley's Telegraph Works Co., Ltd.*

Personal

Mr. C. C. Smith, City Lighting Engineer of Liverpool and President of the A.P.L.E., has been awarded Fellowship of the I.E.S.

Mr. M. S. Barton, of William Jack and Co. (Malaya), Ltd., has been included on the I.E.S. Register of Lighting Engineers.

Mr. R. P. Sayers, sales manager of Ashley Accessories, Ltd., has been appointed to the board.

Mr. N. T. Anthony has been appointed sales representative for Siemens Electric Lamps and Supplies, Ltd., Birmingham. He was previously lamp sales representative in the Nottingham and Lincolnshire area for Metropolitan-Vickers, Ltd.

Mr. S. D. Lay has been promoted to an assistant director of the Department of Labour and National Service of Australia. He is now in charge of the Industrial Services Division in Sydney.

Other personnel changes in the department include the following:—Mr. A. Brentwood becomes assistant secretary of the Industrial Services Division, Mr. S. Holman is now Controller of the Technical Services in Melbourne, and Dr. A. Dresler is senior engineer in Melbourne.

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I.E.S. ACTIVITIES

London Visit

A visit to the "Daily Express" in Fleet Street to see the paper "put to bed" has been arranged for the evening of Tuesday, November 24. The visit will follow immediately on the meeting at the Lighting Service Bureau on the same evening and is timed to start at 8 p.m. Those taking part will be able to see all stages in the production of the newspaper from the receipt of news to dispatch.

Those wishing to take part should apply to the I.E.S. Secretary, 32, Victoria Street.

Sheffield Centre

During the previous session the Committee of the Sheffield Centre decided that an attempt should be made to increase the student membership, and that some special attention should be given to the needs of the present student members. It was agreed that, first of all, a students' lecture should be presented. Dr. F. A. Benson, a member of the Centre, gave such a lecture on September 14 at the University of Sheffield.

With the aid of a large quantity of demonstration equipment, the lecturer covered an extensive field, including the following:—

(a) various types of light sources,
(b) the eye, with special reference to colour and glare,
(c) simple illumination calculations,
(d) Photometric standards,
(e) design of lighting fittings.

The audience included a number of non-member apprentices and electrical-engineering students, who made a request at the conclusion of the meeting for further lectures of this type.

A vote of thanks to the speaker was proposed by Mr. H. Dick.

Birmingham Centre

The first meeting of the 1953-54 session of the Birmingham Centre was held at Regent House, Birmingham, at 6 p.m. on Friday, October 2, 1953.

Birmingham Centre is extremely fortunate in having as its chairman this year Mr. Howard Long. Mr. Long, a founder member of the Birmingham Centre, has been untiring in his efforts in forwarding the work of the Society, which has honoured him by electing him an honorary member. In addition to the service he has given on many committees in connection with illumination, Mr. Long has served on the Council of the Society, both as an ordinary member and as a vice-president. After the usual formal introduction by the deputy chairman, Mr. F. Haynes, Mr. Long gave his address, which was entitled "Whence and Hence."

Mr. Long said our general levels of illumination were pathetically low and that very little use seems to have been made of the tools to supplement illumination at the work point although they had been available to us for many years. A general illumination of 50 lm./ft.^{2}, with a boost to 500 at the work point was a practical possibility which, as Mr. Long said, was a great step from the 5 lm./ft.^{2} of the early days of illuminating engineering.

Mr. Long emphasised that with strong lights we could enjoy the strong colours we need so much. He admonished us in this present Elizabethan era to live up to the traditions of the first Elizabethan age by making the world a bright, cheerful and artistic place. We must open the doors of the Society to the wider public, and our programmes and discussions must be moulded accordingly.

Mr. Long seized the opportunity to consider the Society in general and the Birmingham Centre in particular. Speaking of membership, he said that the Society had not only to retain existing members, but to attract greater numbers of new ones at the same time. By suitable and energetic action the total membership could be increased considerably; the main burden must fall on the individual member, who must do everything in his power to obtain new recruits. As a step towards taking the Society to the people it was the intention of the Birmingham Centre to hold meetings in Coventry,

at Birmingham University, and the Crescent Theatre.

Mr. Long then referred to lighting in industry, briefly outlining its history and development as far as the Society was concerned, from the First World War. He stressed the importance of regular maintenance of lighting fittings, especially the work of keeping them free from dirt and dust. Dust-proof lighting equipment had been available for about 25 years, but there still were many open fittings in use. Stressing the importance of getting the light on to the work where it had to be seen, Mr. Long said much progress had yet to be made in this direction.

We now had a number of different light services, but on straight economics there seems to be nothing to touch the tungsten lamp in an efficient reflector, unless the burning hours were very long and the cost of electricity unusually high.

Fluorescent lamps had established a very definite place in industrial lighting, but they had advantages and disadvantages compared with other sources, and much confusion had resulted in extravagant claims and bad installations.

Taking a peep into the future of lighting practice, Mr. Long suggested that quality would be the main aim, with quantity keeping well in pace behind it. There would be improvements in tubular fluorescent lamps. Developments in the bulb type fluorescent lamps would be such that the use of blended lighting would go out and uncorrected mercury lamps would be discontinued. From the fittings point of view there would be better performance all round with greater corrosion resistance and improved anodised aluminium for specular reflectors. Fittings developments would closely follow lamp developments.

He said that the Society might increase its scope by the reinstitution of sections dealing with various aspects of the lighting field; special sections could cover the interests of architects, users and members of the medical and allied professions.

Mr. Woodcock, supported by Mr. Gibbs, on behalf of the Centre, thanked Mr. Long for a very fine lecture.

Forthcoming I.E.S. Meetings.

LONDON

November 10th

Sessional Meeting. "Fluorescent Dimming Circuits," by H. H. Ballin and W. J. Vine. (At the Welcome Research Institution, Euston Road, N.W.1.) 6 p.m.

November 24th

Lecture. J. N. Hull on "Lighting Applications in New Zealand." (At the Lighting Service Bureau, 2, Savoy Hill, W.C.2.) 6 p.m.

Visit to Daily Express, Fleet Street, 8 p.m.

CENTRES AND GROUPS

November 4th

EDINBURGH.—"Docks and Railway Lighting," by W. T. F. Souter. (At the Conference Room, Manor Club, 12, Rothesay Place, Edinburgh, 3.) 7 p.m.

NEWCASTLE.—"Shipyard Lighting," by J. S. McCulloch. (At the Roadway House, 8, Oxford Street, Newcastle-upon-Tyne, 1.) 6.15 p.m.

SWANSEA.—"Coronation Illumination with Special Reference to Colour." Joint meeting with the Electrical Association for Women. (At the Plaza Buildings, The Kingsway, Swansea.) 6.30 p.m.

November 5th

CARDIFF.—"Miniature Lamps and Special Application," by W. A. Kimber. (At the South Wales Electricity Board's Demonstration Theatre, The Hayes, Cardiff.) 5.45 p.m.

GLASGOW.—"Plant Cultivation and Artificial Light," by J. B. R. Anderson. (At the Institute of Engineers and Shipbuilders in Scotland, 39, Elmbank Crescent, Glasgow, C.2.) 6.30 p.m.

GLOUCESTER AND CHELTENHAM.—"New Lamps, New Uses and Techniques," by R. V. Mills. (At the Cadena Café, High Street, Cheltenham.) 6.30 p.m.

November 6th

BIRMINGHAM.—"Radiation from Space," by Martin C. Johnson. (At the "Regent House," St. Phillip's Place, Colmore Row, Birmingham.) 6 p.m.

November 9th

SHEFFIELD.—"Lighting in Crime Detection," by C. H. Edlin. (At the Medical Library, The University, Western Bank, Sheffield, 10.) 6.30 p.m.

November 10th

STOKE-ON-TRENT.—"Irradiation of Plants," by J. J. French. (At the Lecture Hall of the Midlands Electricity Board, 31, Kingsway, Stoke-on-Trent.) 6 p.m.

November 12th

BIRMINGHAM.—Ladies' Night. (At the Queen's Hotel, Birmingham.)

MANCHESTER.—Members' Night. (At the Demonstration Theatre of the North Western Electricity Board, Town Hall Extension, Manchester.) 6 p.m.

NOTTINGHAM.—"Television Studio Lighting," by D. C. Lightbody. (At the Demonstration Theatre of the East Midland Electricity Board, Smithy Row, Nottingham.) 6 p.m.

BRADFORD.—"New Lamps, New Uses and New Techniques," by H. R. Ruff. (At the Offices of the Yorkshire Electricity Board, Bradford No. 1 Sub-Area, 45-53, Sunbridge Road, Bradford.) 7.30 p.m.

November 17th

LIVERPOOL.—"Lamps and Lighting for Inspection," by H. E. Bellchambers. (At the Merseyside and North Wales Electricity Board's Service Centre Lecture Theatre, Whitechapel, Liverpool.) 6 p.m.

November 18th

MANCHESTER.—Annual Dinner at the Cafe Royal.

HUDDERSFIELD.—"The Maintenance of Fluorescent Lighting Installation," by W. A. R. Stoyle. (At the Yorkshire Electricity Board's Showrooms, Market Street, Huddersfield.) 7.30 p.m.

NORTH LANCASHIRE.—"Glass and the Lighting Industry," by P. M. Davidson. (At the Demonstration Theatre of the North Western Electricity Board, 19, Friargate, Preston.) 7.15 p.m.

TEE-SIDE.—"Principles and Applications of Photo-electric Cells," by S. Rodda. (At the Cleveland Scientific and Technical Institution, Corporation Road, Middlesbrough.) 6.30 p.m.

November 23rd

LEEDS.—"Light and other Radiations in Crime Investigation," by C. H. Edlin. (At the Lecture Theatre of the Lighting Service Bureau, 24, Aire Street, Leeds, 1.) 6.15 p.m.

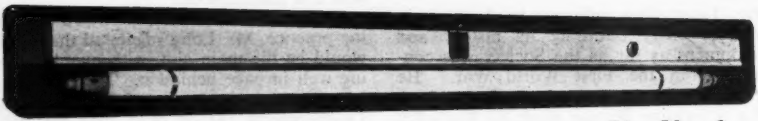
LEICESTER.—"Interior Decoration and Lighting," by Mrs. D. M. Buckland. (At the Demonstration Theatre of the East Midlands Electricity Board, Charles Street, Leicester.) 7 p.m.

November 26th

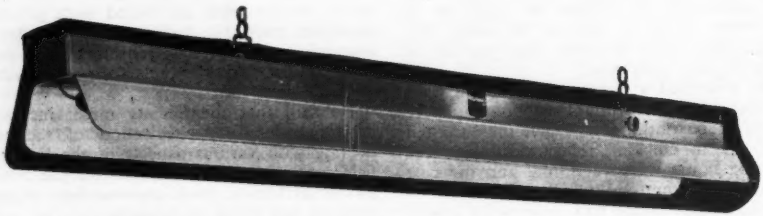
NOTTINGHAM.—Film Evening (venue to be announced.)

November 27th

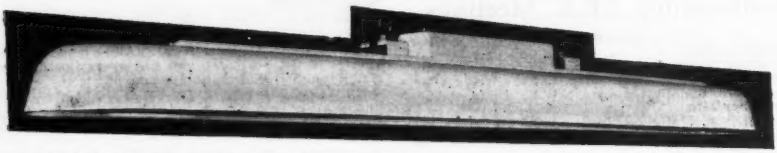
BATH AND BRISTOL.—"Lighting for Outdoor Sports," by C. Holden. (At the South Western Electricity Board, Lecture Theatre, Old Bridge Street, Bath.) 7 p.m.



SJB5-5ft 80 watt Batten fitting . . . £4 . 19 . 6



SJO5-5ft 80 watt Open Perspex Trough . . £8 . 4 . 4



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Correspondence

Illumination Trends

To the Editor, LIGHT AND LIGHTING.

The recent correspondence in *Light and Lighting* and the comments of "Lumeritas" have aroused keen interest amongst the members of the lighting fraternity in the Midlands, and in particular some of the younger members.

It must always be borne in mind that the young lighting engineer of to-day will be in charge of the big lighting schemes in 20 years' time, and much of the lighting technique accepted to-day without question will no longer exist in the days to come. It is to the young engineer we must look to bear the brunt of all future developments, and with that in mind we must make sure that he is given every opportunity to display his genius.

One must admit, of course, that all business organisations depend on sales for their very existence, but without losing sight of this the young engineer must be allowed to develop a pride in the type of work he does apart from any ultimate sales.

I have made a point of mixing with young men who have just entered the electrical industry, and I could write a book on some of the experiences of these young men and the troubles they have with their employers. It will, however, suffice to give you briefly the following actual true experience.

A young man employed by a well-known electrical organisation on their lighting technical staff was asked to visit a small factory, the owner of which was anxious to increase the light in one of his shops. After carefully examining the types of fittings used, their positions, etc., he quite honestly advised his client that there was nothing he could really suggest that would improve the existing light output in the shop. He did, however, suggest that some money should be spent on the decoration schemes, such as paintings of walls, floors, etc. The client was most grateful for this straightforward advice which would save him money, but it must be noted with regret that the young engineer's sales manager was not so pleased, and, in fact, was extremely put out that quite a few of the firm's latest fittings had not been sold to the client. The young engineer assures me, in confidence, that his position with his employers is not quite so good because of this, and he is now carefully deciding whether to remain "tied" or to become a free-lance which, although less secure from the financial point of view, would, nevertheless, permit him to develop his knowledge and ingenuity in lighting problems. This practice is not in any way uncommon, and unless electrical organisations are a little more tolerant with their employees they are going to find increasing difficulty in obtaining the right type of man in the future.

Birmingham. D. LEWIN.

SITUATIONS VACANT

PHYSICIST required for development work on miniature lamps by a prominent London Company. Write in confidence to Box No. 515, c.o. Era Publicity, Ltd., 7, Fitzroy Square, London, W.1.

ASSISTANT with experience in planning of lighting schemes required by old established firm of Illuminating Engineers. Applications stating age and experience to Box 853.

LIGHTING ENGINEER required, a Sales Engineer representing firm of Illuminating Engineers in the East Midlands area, I.E.S. Registered Lighting Engineer preferred. Applications stating age and experience to Box 854.

PROCESS ENGINEER required for technical control of production lighting fittings, preferably with knowledge of sheet metal work, including welding, spraying, stoving and assembly practices. Rapidly expanding activities offer good prospects to a man of drive and initiative. Replies giving full details of age, training and experience, positions held, etc., and salary required to Box 855.

Mr. A. E. Iliffe, Director and General Sales Manager of The Benjamin Electric, Ltd., Brantwood Works, Tottenham, London, N.17, has been asked to recommend a suitable ENGINEER, possessing sales and technical lighting qualifications, for employment with a large electrical engineering company in South Africa.

The appointment is considered of a senior character and will carry with it a suitable salary, also assistance can be given for housing accommodation.

Applicants should be between the ages of 30 and 35 preferably, and, if married, it is essential that the wife understands living conditions in Johannesburg, South Africa, which, although very pleasant, are somewhat different from those experienced at home.

All applications will be treated in the strictest confidence, and Mr. Iliffe will, after interview, make his recommendations direct to the Head Office concerned in South Africa.

POSTSCRIPT

By "Lumeritas"

A recent letter in a newspaper raises once again the question of illuminated street name-signs. I suppose that street names could be made legible at night by the use of a quite simple, preferably internally illuminated sign and under certain circumstances would be helpful alike to pedestrian and motorist. But something would have to be done to standardise their placing. The trouble with existing road name-plates is not so much that they cannot be read but that they cannot be found; they might be anywhere between 3 ft. and 20 ft. from the ground and anywhere within 20 yd. or so from the road junction. In towns, at any rate, I find that the normal street lighting—excluding those places where no self-respecting local authority would care to acknowledge responsibility for the lighting—is sufficient to render a street name legible once I have found it One London borough made what appeared to be some attempt at standardising the positions of their name-plates, but as they were erected on poles at the street corners they were not very popular in busy streets.

I hear that someone has suggested an annual award for the best new street-lighting lantern. I doubt if the suggestion was meant to be taken too seriously. Such an award might lead to even more designs of lanterns—and surely we have enough to be getting on with. In any case, is such an "Oscar" likely to lead to better lantern design? I doubt if the Hollywood Oscar encourages better films. There is already sufficient competition between manufacturers of street-lighting equipment without any artificial stimulus.

The Eiffel Tower offers an irresistible temptation to French lighting engineers and publicity people who are always thinking up new ways of draping it with light. Before the war a well-known automobile firm had a concession allowing them to illuminate the tower and show on it the design used on their cars; at another time the tower displayed a huge illuminated clock dial and at another a giant thermometer. The latest scheme now being discussed in Paris includes what is called a "plaid effect," which would give the tower the appearance of wearing a kilt. The scheme, which our friends north of the border might or might not take as a compliment, is not without its opponents; even some of the French object to their tower being given the new Christian Dior short look.

My comment last month on a lamp still in use after 40 years has brought me a note from a well-known electrical and lighting engineer in Yorkshire who has recently recovered a 16-c.p. carbon lamp which he supplied in 1915. It was apparently installed in a fitting that was very difficult to get at, and it had remained in service until a short time ago. It had not been in great use and had probably burned only 1,000 to 2,000 hours. My correspondent knew it was one of his lamps because in those days all lamps supplied to him were etched with his name. Incidentally, as the fitting in which it was used was so inaccessible, I assume it received little, if any, maintenance during this time. You may wonder where this light was installed that it could for so long resist the march of progress; it was in a hospital.

The committee of the Newcastle Centre of the I.E.S. have most original ideas for the enlightenment and amusement of their members. Earlier in the year they arranged a river trip on the Tyne to see, with the aid of a cargo of liquid refreshment, the skyline of Newcastle by night. A few weeks ago a party of 188, made up of I.E.S. members, friends, relatives, and, to quote from a newspaper report, critics, loaded themselves into eight Dakotas and flew over Tyneside by night. The Centre is to be congratulated on this display of ingenuity; having had two trips they must have a third, and I shall wait impatiently to learn what mode of transport and what angle of view they next adopt.